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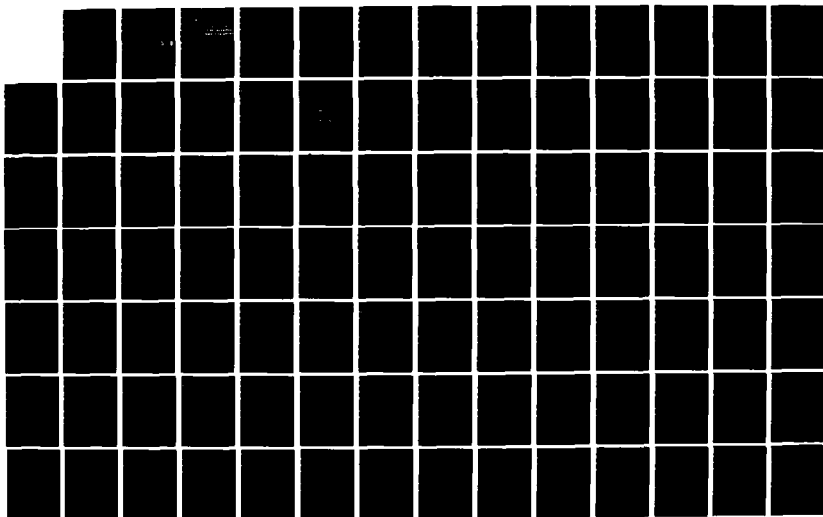
HOLY LOCH FLEET MOORINGS INSPECTION REPORT(U) NAVAL  
FACILITIES ENGINEERING COMMAND WASHINGTON DC CHESAPEAKE  
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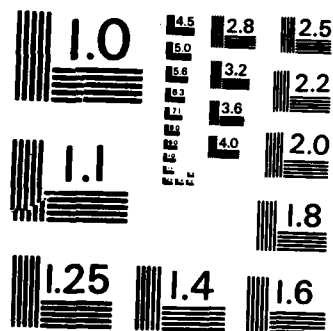
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**AD-A166 643**

# **HOLY LOCH FLEET MOORINGS INSPECTION REPORT**

**15 OCTOBER 1982**

**OCEAN ENGINEERING AND CONSTRUCTION PROJECT OFFICE  
CHESAPEAKE DIVISION  
NAVAL FACILITIES ENGINEERING COMMAND  
WASHINGTON, DC 20374**

**FPO-1-82(22)**

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This report contains results of the inspection of selected Fleet Moorings and Navigation Buoys at the Naval Activity, Holy Loch, Scotland. Divers from UCT-1 and an engineer from the Ocean Engineering & Construction Project Office of CHESNAVFACENGCOM conducted the inspections from 17-25 June 1982. (Con't)

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Results of the inspection indicate that a majority of the ground legs in the AFDB-7 mooring may be in need of overhaul, and that a number of legs should be repositioned in order to improve the catenary of the mooring chains. The condition of the two Sixth Class moorings and the two Navigation Buoys is satisfactory. Comments concerning the condition of specific components and any recommendations for remedial action are included.

### **Abstract**

This report contains results of the inspection of selected Fleet Moorings and Navigation Buoys at the Naval Activity Detachment, Holy Loch, Scotland. Divers from UCT-1 and an engineer from the Ocean Engineering and Construction Project Office of CHESNAVFACENGCOM conducted the inspections from 17 - 25 June 1982.

Results of the inspection indicate that a majority of the ground legs in the AFDB-7 mooring may be in need of overhaul, and that a number of legs should be repositioned in order to improve the catenary of the mooring chains. The condition of the two Sixth Class moorings and the two Navigation Buoys is satisfactory. Comments concerning the condition of specific components and any recommendations for remedial action are included.

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## 1.0 INTRODUCTION

1.1 Background. In November 1981, CINCUSNAVEUR requested that COMCBLANT provide UCT-1 divers to inspect six legs of the AFDB-7 mooring, the Number 2 and Number 3 Sixth Class moorings, and the Port and Starboard Navigation Buoys at Holy Loch (Ref. A, Annex F); in May 1982 this request was expanded to include all 22 ground legs of AFDB-7 (Ref. B). In turn, on 26 March 1982, COMCBLANT stated that CHESNAVFACENGCOM would provide funding and technical support for the inspection (Ref. C). The funding for UCT-1 participation was provided by CHESNAVFACENGCOM from the NAVFACENGCOM (Code 10) — sponsored Fleet Mooring Maintenance Program. References D and E provide additional background information. Technical support included inspection planning, development of diver inspection procedures, on-site engineering support, recording of the raw data gathered by divers, data analysis, and preparation of the inspection report. Inspections were conducted from 18 - 24 June; local debriefings were conducted on 25 and 28 June. Preliminary results of the inspection and initial recommendations for corrective action were reported by message on July 29 (Ref. F). Annex E contains a chronology of significant events.

1.2 General Description and Historical Information. Holy Loch is located on the west coast of Scotland about 35 miles west-northwest of Glasgow. Access to Holy Loch from the Atlantic Ocean is via the Irish Sea and the Firth of Clyde. There are 10 moorings located in the northwest end of the Loch; Figure 1 shows the position of each mooring.

1.2.1 AFDB-7. The AFDB-7 mooring is a Special Floating Dry Dock mooring consisting of four dock cells which are connected together and moored in place by 22 ground legs and anchors. The dock is 513 feet long and 241 feet wide. Each leg of three-inch diameter studlink chain runs from a padeye on deck to a 30,000 pound anchor (stockless without stabilizer type). AFDB-7 was originally installed in 1961 at a position to the southeast of its present location; movement of the dock to the current location was completed on 5 August 1971.

The dry dock is routinely used by fleet ballistic missile (FBM) submarines. Because of the strategic importance of this facility and the possibility of severe winter weather, the material condition of the mooring is a continuing concern. Between 1973 and 1981, 19 of the 22 ground legs were inspected by the British Ministry of Defense (M.O.D.). During this period, only one of the ground legs was determined to contain a chain link which has worn to less than 80% of the original wire diameter; the length which contained this link was replaced in 1981. In April 1982, divers from USS HUNLEY (AS-31) visually inspected 21 of the 22 ground legs. All chain was reported to be in good condition, although some legs were observed to have little or no catenary.

A schematic diagram of the AFDB-7 mooring is shown in Figure 2.

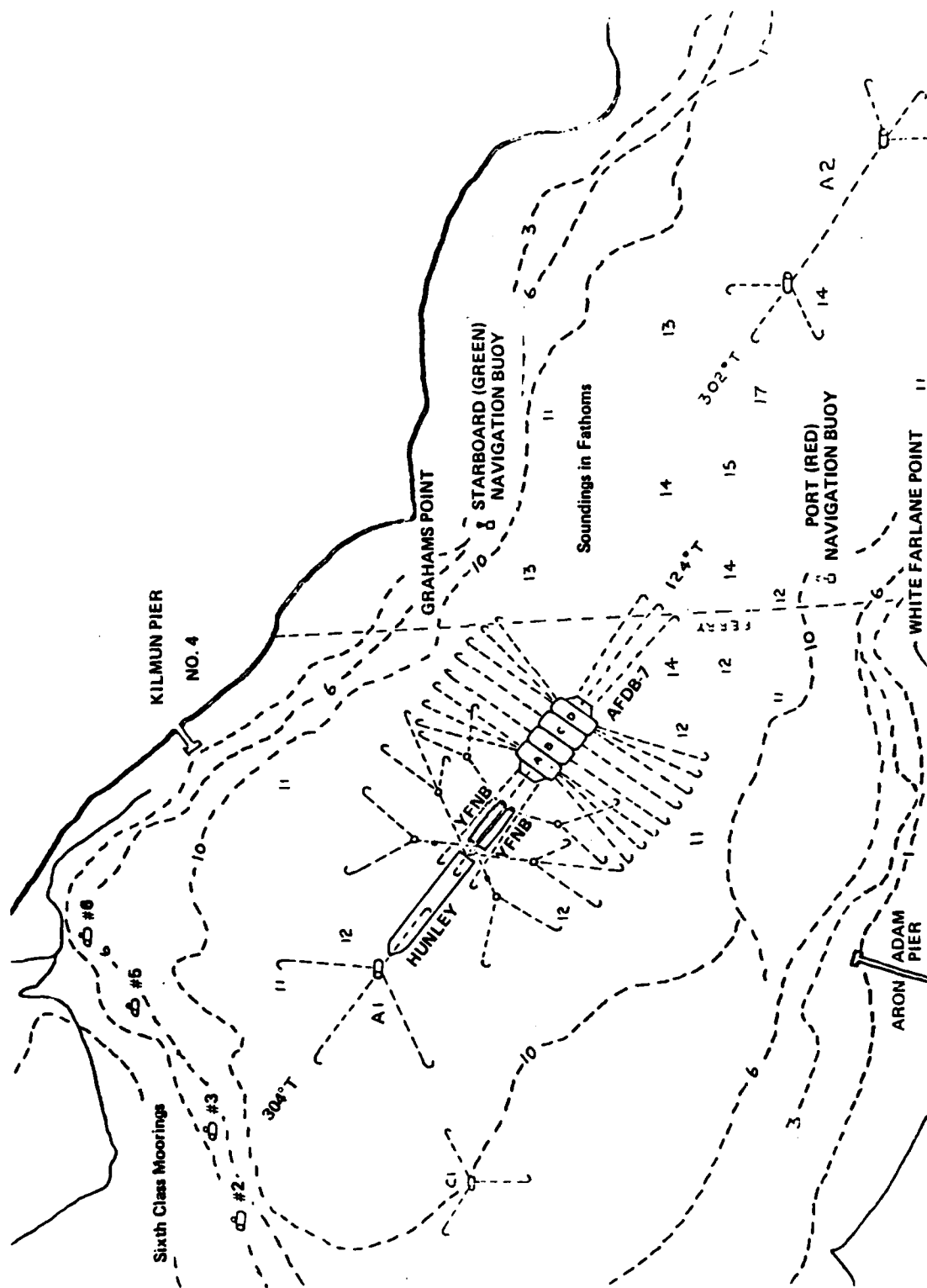


Figure 1. Holy Loch Moorings and Navigation Buoys

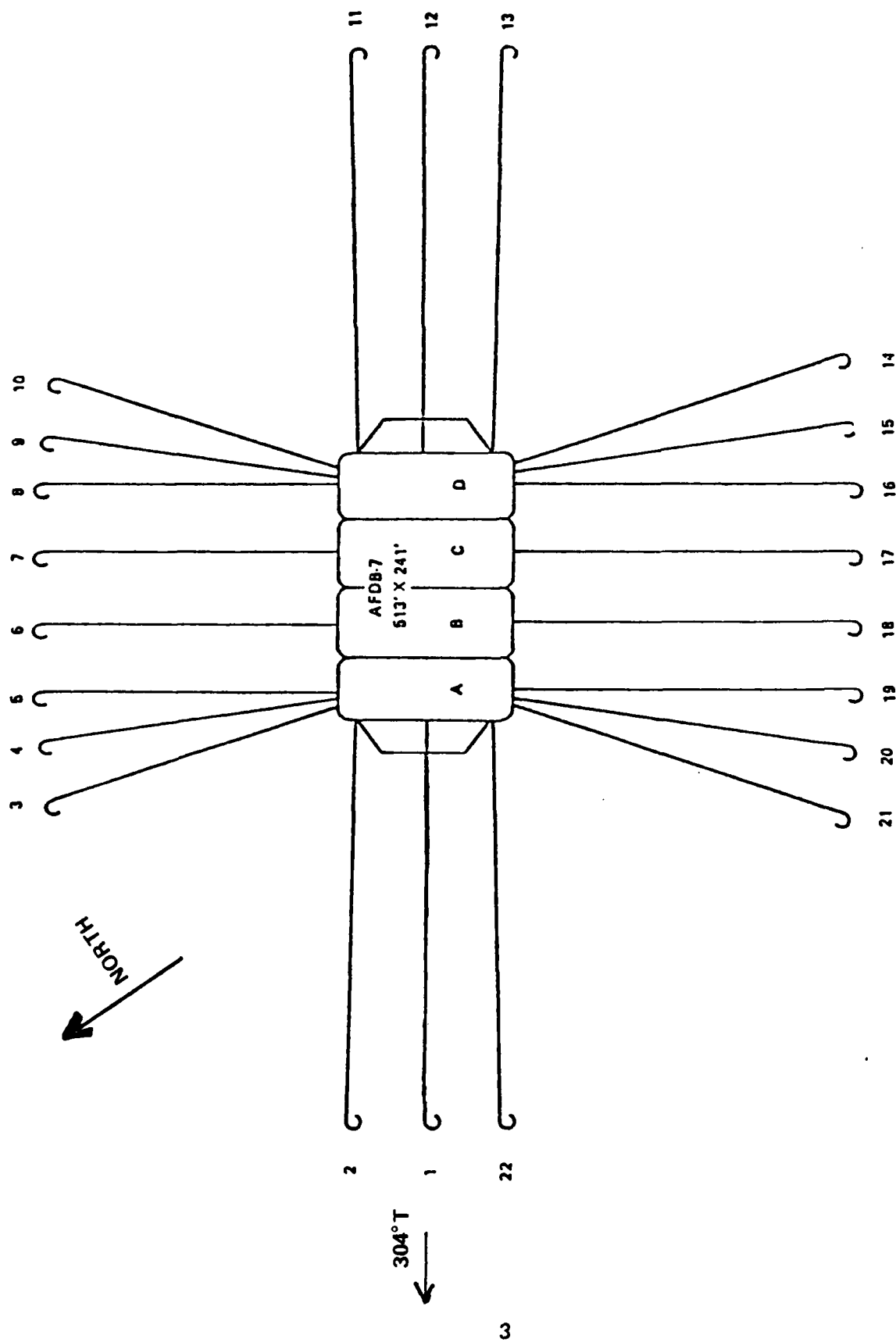


Figure 2. Schematic of AFD8-7 Mooring, Showing Ground Leg Numbers

**1.2.2 Sixth Class Moorings.** "Sixth Class" is the British designation for the single-anchor/single riser type of mooring illustrated in Figure 3. A row of such moorings is located along the northwest margin of the Loch (see Figure 1). Records indicated that six moorings were in place; Numbers 2 and 3 were to be inspected. Upon arrival the inspection team learned that buoys Number 1 and 4 had been removed. The remaining moorings are regularly used by small barges and maintenance vessels.

**1.2.3 Navigation Buoys.** These special purpose Navigation Buoys (Figure 3) are used by maintenance vessels and FBM submarines as they transit to or from the Holy Loch dry dock. Buoy positions are shown in Figure 1.

## **2.0 INSPECTION PROCEDURES**

The purpose of the inspection was to determine the general physical condition of the moorings and buoys, and, when possible, to verify or update existing installation and maintenance records. The underwater inspections performed by divers sampled only a small portion of the submerged chain links and jewelry in order to compile a general description of the installation's condition. If accurate records of original material and configuration (such as wire diameter) or subsequent maintenance (e.g., replacement of chain links) are not available, then the measurements made by divers may not reveal components which have badly deteriorated or are sub-standard. Conversely, the existence of fairly consistent measurements during a "selective sampling"-type inspection is a good indication of the installation's overall condition. It should be kept in mind that underwater inspections are intended as a relatively quick and inexpensive supplement to, and augmentation of, accurate maintenance records. As such, they cannot fully substitute for a complete inspection involving removal of the mooring from the water, and the measurement and evaluation of each component.

The most important parameter used to evaluate the condition of a mooring is chain wire diameter. After cleaning to bare metal, a selective sampling of the wire diameter of chain links and connecting hardware is taken in order to determine the amount of corrosion and wear. "Single Link" measurements are taken where chain is slack, and detect only corrosion loss. "Double Link" measurements, taken where two links connect under tension, detect the combined effects of corrosion and wear. Figure 4 shows how these measurements are made. Chain links and other components which measure greater than 90% (+90%) of original wire diameter are considered satisfactory; measurement between 80% and 90% (+80%) of original diameter is cause for the mooring classification to be downgraded; any measurement of less than 80% (-80%) causes the mooring to be considered unsatisfactory for fleet use.

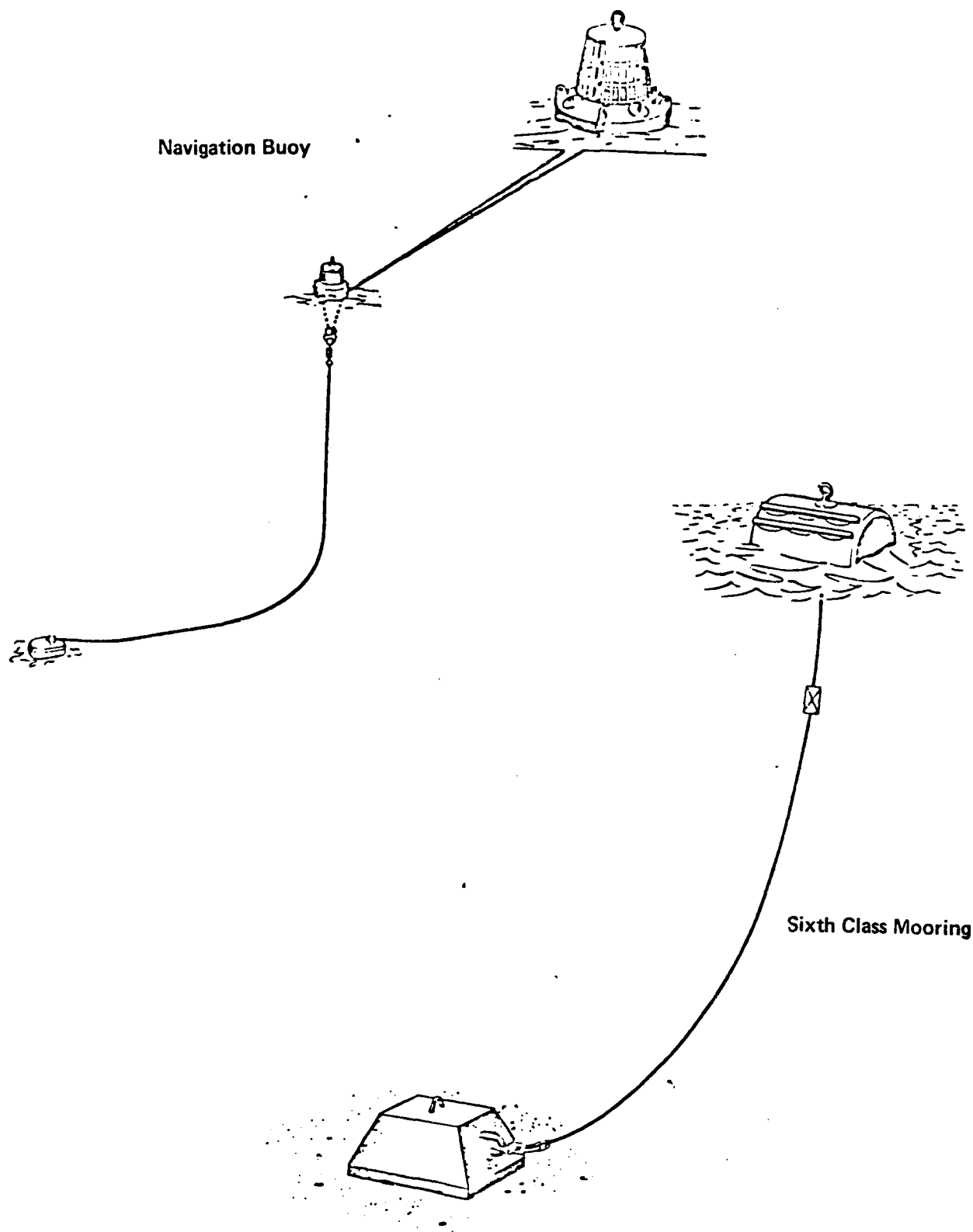
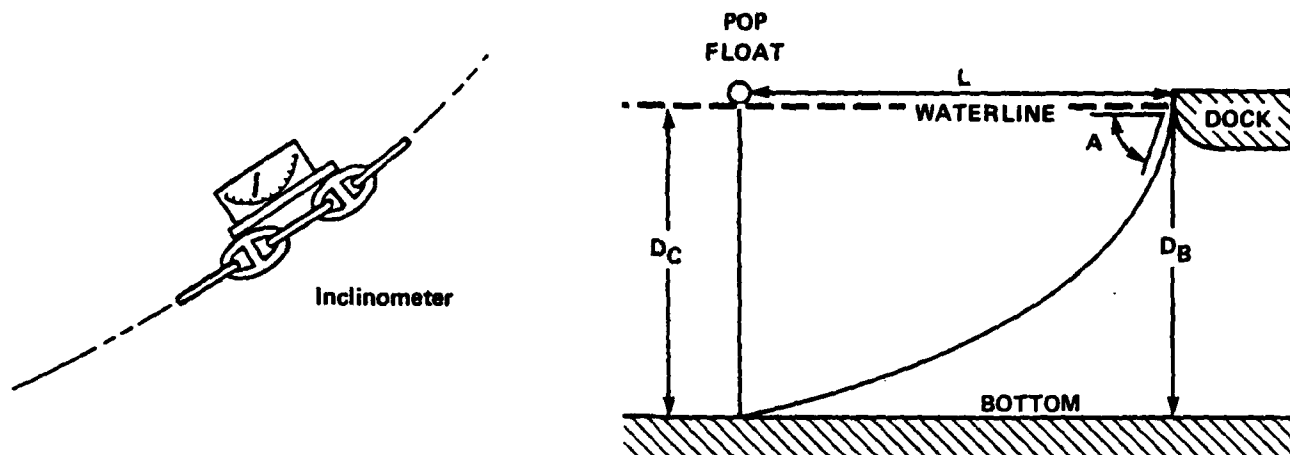


Figure 3. Schematics of Navigation Buoy and Sixth Class Mooring



**Catenary Data**

- L = Lateral Distance
- A = Inclinometer Angle
- D<sub>C</sub> = Depth Where Chain Enters Mud
- D<sub>B</sub> = Depth Below Deck Edge

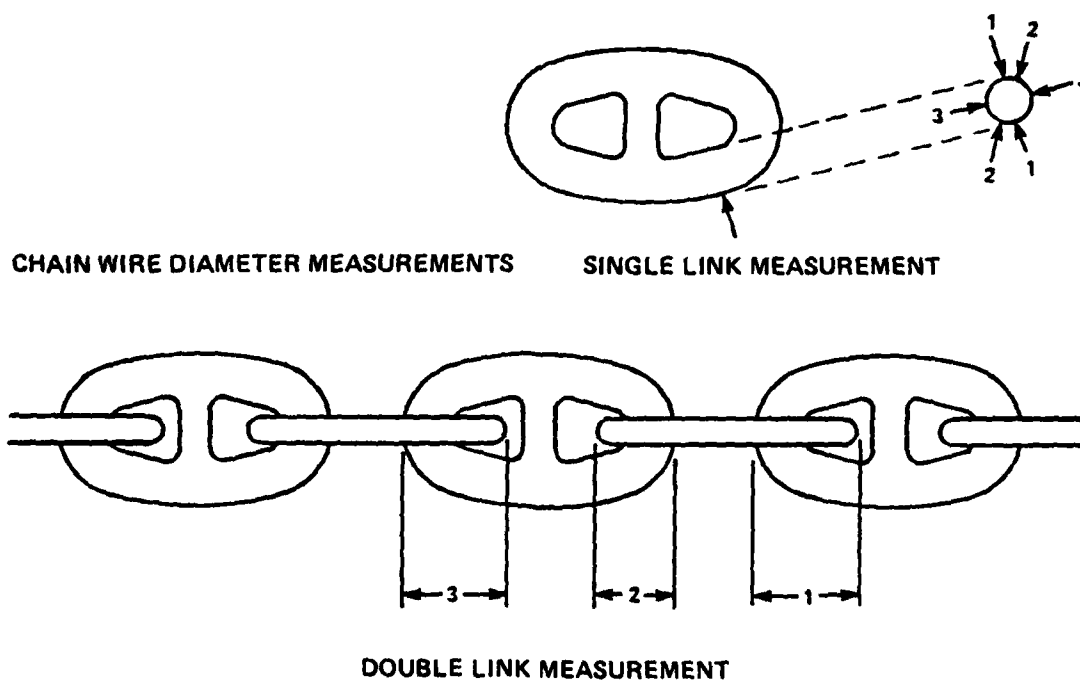


Figure 4. Chain Wire Diameter Measurements and Ground Leg Catenary Observations

Standard underwater inspection procedures do not call for the inspection of any part of the mooring which has been buried. Ground legs and risers were observed only to the point at which they become buried; no attempt was made to locate and inspect anchors or other mooring materials which were not readily visible.

## **2.1 AFDB-7**

**2.1.1 Physical Condition of Ground Legs.** For inspection purposes, sections of each of the 22 ground legs were defined as follows:

Section I: On-deck, from padeye to chock

Section II: Splash zone, from chock to waterline

Section III: From waterline to mudline

Inspection of Section I involved selective sampling of double link measurements, a visual check of the general condition of all links, and a visual check for wear at the padeye and pelican hook. A "Go/No-Go" technique was used for measurements in this section: by using a pre-cut gauge, each connection point was graded as +90%, +80%, or -80% without requiring a caliper measurement.

Section II was inspected by taking double link caliper measurements of all links and noting their general condition.

For Section III the inspection included a visual check of the chain from surface to the mud line and "Go/No-Go" double link measurements every 20 feet of water depth. Single link measurements were made on short sections of Legs #15 and #19 which were lifted from the mud. (Note: lifts were made using cranes aboard AFDB-7; not more than 6 - 8 links were lifted in order to avoid disturbing the anchor.)

**2.1.2 Cathodic Protection.** None of the ground legs is equipped with a cathodic protection system per se. However, voltmeter readings were taken concurrent with the double link measurements in Section III of Legs #1 and 13-22 in order to determine to what degree, if any, the impressed current systems of nearby vessels may be providing cathodic protection for the ground legs. Voltmeter readings are consolidated in Table 2.

**2.1.3 Catenary Profile.** Several observations were made in order to determine the catenary of each leg. The parameters involved are illustrated in Figure 4. The inclinometer readings were taken where the chain enters the water; depth readings were taken directly below the deck edge and where the chain enters the



mud; the lateral distance is the horizontal distance from the deck edge to the pop float installed above the position where the chain enters the mud. Two inclinometer readings were taken on several legs: the first under relatively calm conditions (winds less than 10 KTS), and a second during strong winds (to 40 KTS) in order to compare the effect on the catenary.

**2.1.4 Ground Leg Relative Bearing.** The orientation of each leg relative to the dock was observed by using a hand-held compass to determine the bearing of the chain as it enters the water. For some legs, a second bearing was taken on a pop float above the point where the chain entered the bottom mud. Comparison of observed vs. designed orientation may indicate which ground legs, if any, should be repositioned.

**2.1.5 Motion of AFDB-7.** From known positions ashore, transit readings to prominent features on the dry dock were recorded under various wind conditions in order to determine the extent of movement of the dock. A schematic diagram of the surveying arrangement is shown in Annex A.

The results of these inspections are presented in Annex A.

**2.2 Sixth Class Moorings.** Two moorings of this type were inspected by divers. The inspection of each mooring included checking the overall physical condition of the buoy itself, observing the thickness of marine growth, and inspecting the condition of the paint under the growth. *Go/No-Go double link measurements* of the riser chain wire diameter were made at three points along its length.

Results are presented in Annex B.

**2.3 Navigation Buoys.** Inspection of the Navigation Buoys was similar to that of the Sixth Class moorings. In addition, transit readings were taken from shore to verify the location of each buoy.

Annex C contains the results of these inspections.

### **3.0 INSPECTION SUMMARY**

This summary provides a brief analysis of the results of the inspection and provides recommendations for corrective action if needed. A more detailed presentation of data can be found in the appropriate annex.

### **3.1 AFDB-7-Summary**

**3.1.1 Findings.** A summary of inspection data is presented in Table 1. Analysis of the observations and measurements made by the inspection team yielded the following results:

- No broken links or hardware were found; 27% (6 of 22) legs were +90% of original 3" chain wire diameter over the entire inspected length (to mudline); 68% (15 of 22) were +80% at some point along their length; one leg (#22) was -80% in Section II. All but one of the +80% or lower measurements occurred in Section II, the splash zone (see Figure 5). Leg #18 had no on-deck stopper (pelican hook).
- No anchors or sinkers were located; all legs were buried in bottom mud a relatively short distance from the floating dock.
- Three legs were noted to have slack chain resting on the bottom; 36% (8 of 22) of the legs had surface chain angles of greater than 85° from the horizontal; 41% (9 of 22) had angles of 75° - 85°; 32% (7 of 22) of the lateral distances were less than 18'; average lateral distance was 45' (see Figure 6).
- Voltmeter readings are typical of unprotected steel in seawater, indicating that no cathodic protection is being provided via impressed current from vessels in the vicinity (see Table 2).
- Analysis of transit readings indicates that wind-induced movement of AFDB-7 is not extreme. For steady winds of 30 KTS with gusts to 40 KTS, the dock experienced a net lateral displacement of approximately 32' from its position in light winds (<10 KTS) from approximately the same direction; maximum displacement was 37' at the bow during a yaw of about 2° to port; maximum yaw was about 3° to starboard.
- Because of inherent inaccuracies in the observation system, no firm conclusions can be drawn regarding the relative bearing of the ground legs.

### **3.1.2 Proposed Corrective Action**

- The chain in Section II of Leg #22 which measured less than 80% of original wire diameter must be replaced as soon as possible.
- An engineering analysis of AFDB-7 mooring design should be conducted in order to define the optimum catenary of each leg; pending results of such an analysis, a number of legs should be repositioned to tighten the catenary prior to the 82 - 83 winter season.

# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET HOLY LOCH, UK		2. MOORING NO. AFDB-7	3. TYPE/CLASS MOORING Special Dry Dock	4. LAT: LON:	
5. INSPECTION	DATE 18-24JUN82	DIVERS -----	WATER DEPTH -----	ENGINEER M. M. Walter	INITIALS -----

LEG #	CONDITION			WATER DEPTH (Note 1)				INCLINOMETER ANGLE (Note 2)	RELATIVE BEAR- ING (Note 3)	LATERAL DIS- tance(Note4)
				D <sub>B</sub>		D <sub>C</sub>				
	I	II	III	Obs.	MLWS	Obs.	MLWS			
1	+90%	+80%	+90%	95	84.6	95	84.6	80°	000°	Not observed
2	+90%	+80%	+90%	104	94.8	96	96.8	59° / 62°	010°	(90)
3	+90%	+80%	+90%	108	99.3	107	98.3	78° / 71°	061°	(60)
4	+90%	+80%	+90%	108	100.6	105	97.6	87° / 77°	050°	45
5	+90%	+80%	+90%	109	102.1	109	102.1	89° / 86°	100°	(3)
6	+90%	+80%	+90%	111	104.4	109	102.4	82° / 65°	070°	54
7	+90%	+80%	+90%	95	89.3	95	89.3	77° / 55°	070°	(60)
8	+90%	+90%	+90%	88	83	92	87	66° / 33°	080°	120
9	+90%	+90%	+90%	88	84.4	86	82.4	85°	090° / 120°	57
10	+90%	+80%	+90%	88	84.6	85	81.6	78°	120° / 160°	54
11	+90%	+80%	+90%	81	78.9	85	82.9	59° / 43° / 61°	180°	88
12	+90%	+90%	+90%	90	77.5	90	77.5	75°	180°	60
13	+90%	+80%	+90%	90	80.3	90	80.3	79°	175° / 170°	39
14	+90%	+80%	+90%	89	80	93	80	74°	220° / 235°	54
15	+90%	+90%	+90%	87	79.2	89	79.2	91°	230°	03
16	+90%	+80%	+90%	87	74.7	89	74.7	84°	195° / 225°	33
17	+90%	+80%	+90%	85	75.6	88	78.6	83°	185° / 220°	39
18	+90%	+90%	+90%	84	77.4	84	77.4	87°	205° / 220°	18
19	+90%	+90%	+80%	88	76.5	88	78.5	88°	285°	00
20	+90%	+80%	+90%	88	78.3	88	82.3	92°	285° / 305°	12
21	+90%	+90%	+90%	88	79.3	88	79.3	85°	290° / 300°	03
22	+90%	-80%	+90%	85	79.6	85	79.6	65°	000° / 353°	57

Note 1: D<sub>B</sub> = Depth at dock edge; D<sub>C</sub> = Depth where chain enters mud; Obs. = actual measurement;

MLWS = Depth at Mean Low Water Springs

Note 2: Second and third angles measured during different weather conditions; see text.

Note 3: First observation taken along chain as it enters water; second observation, if recorded, was from deck edge to pop float above point where chain enters mud.

Note 4: Unable to measure Leg #1 due to proximity of other vessels; values in parentheses are from inspection performed in April 1982 by divers from USS HUNLEY.

Table 1. Summary of AFDB-7 Inspection Data



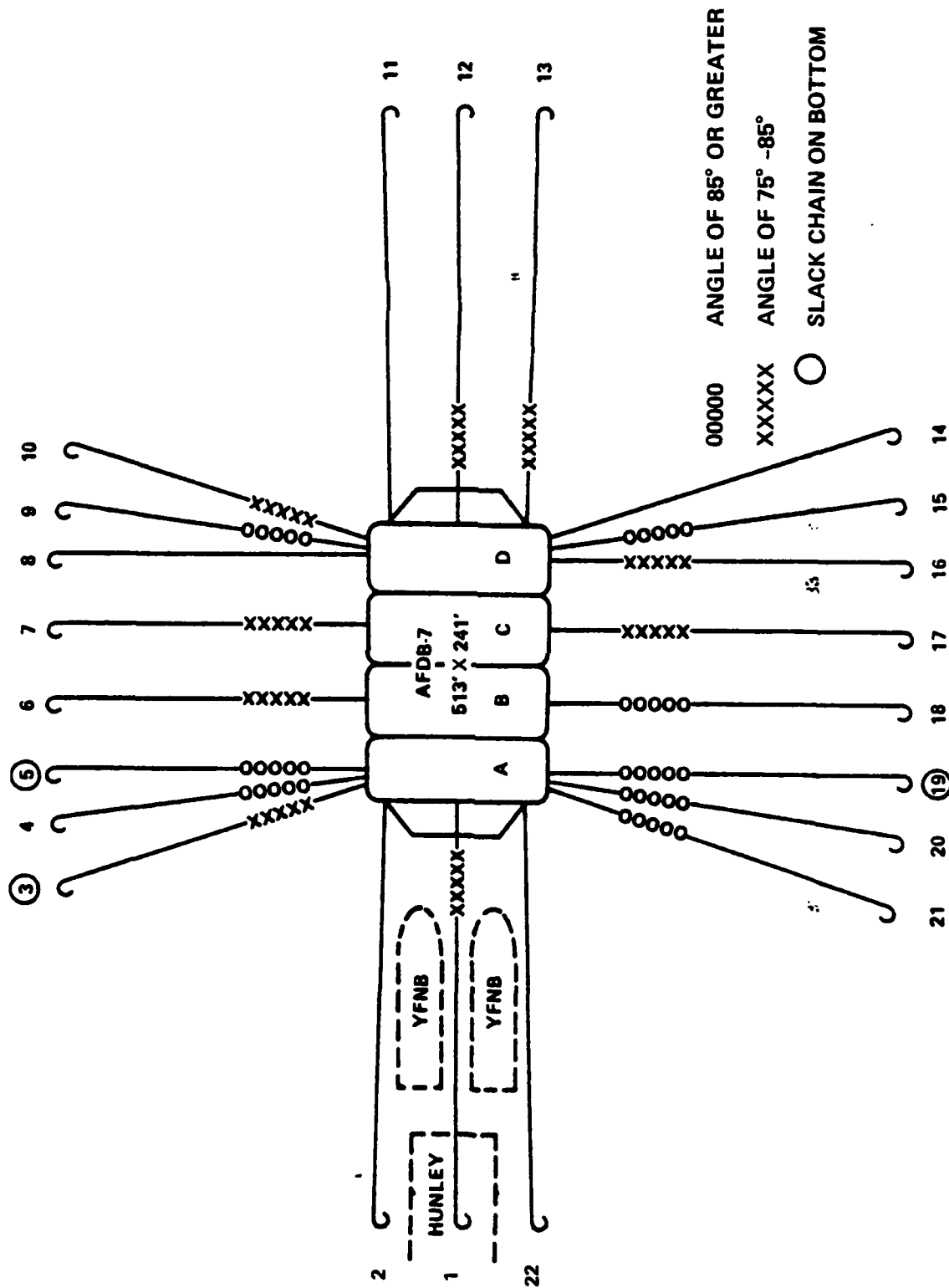


Figure 6. Summary of Catenary Data

# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET HOLY LOCH UK		2. MOORING NO AFDB-7	3. TYPE/CLASS MOORING SPECIAL DRY DOCK	4. LAT: LON:	
5. INSPECTION	DATE 18-24JUN82	DIVERS	WATER DEPTH	ENGINEER M.M WALTER	INITIALS

## \*VOLT-METER READINGS\*

LEG #	WATER DEPTH			
	80'	60'	40'	20'
1	664	649	607	602
13	663	667	670	668
14	668	679	677	694
15	681	689	699	718
16	681	684	672	666
17	675	676	668	677
18	675	679	675	660
19	682	679	666	651
20	664	663	651	643
21	667	665	658	645
22	663	670	665	640

Table 2. AFDB-7 Voltmeter Readings

\* MEASUREMENTS IN mV

### **3.2 Sixth Class Moorings – Summary**

**3.2.1 Findings.** The two moorings inspected are in generally good-to-excellent condition. Inspection of the buoys revealed no holes, dents, or pitting, and only medium marine growth was observed. The riser chain was in good condition, with all measurements +90%. Neither of the two anchors was observed. The riser of mooring #2 contained two swivels, while there was no swivel observed in the riser of mooring #3.

**3.2.2 Proposed Corrective Action.** A swivel should be inserted in the riser of #3 mooring.

### **3.3 Navigation Buoys**

**3.3.1 Findings.** The condition of these buoys is generally good-to-excellent. The topside portion of each of the buoys is in good condition; minimal pitting was observed below the waterline. The bridles and risers are in good condition; all double link measurements were +90%. The anchors of both buoys were located and there was no evidence of dragging. The only notable observations were the existence of a box swivel in place of a standard swivel in one of the risers, and a 4 - 5' length of riser chain wrapped around the clump anchor, both in the Starboard buoy.

**3.3.2 Proposed Corrective Action.** None.

## **4.0 MOORING INSPECTION COMMENTS/RECOMMENDATIONS**

**4.1 AFDB-7.** The fact that over 70% of the ground legs had measurements of less than 90% of original wire diameter at some point along their length indicates that the mooring may be in need of overhaul. It is recommended that at least the first two shots of chain in each leg be replaced with new chain, unless a thorough engineering analysis indicates that fewer legs are required. Some legs may require additional new chain depending on the specific location and extent of the wear zone. A cost estimate for new chain and associated hardware is presented in Annex D. Pending results of the analysis to specify the mooring requirements of AFDB-7, it is recommended that only the segment of Leg #22 previously identified be replaced immediately.

Consideration should be given to the possibility of providing cathodic protection for the mooring, especially in the event any of the legs are replaced during overhaul.

Maintenance of proper ground leg catenary is important in order to dampen dock motion and minimize the movement of the dock relative to nearby vessels of much smaller sail area. In view of the fact

that the catenary of many of the legs apparently should be tightened, it is recommended that action be taken prior to completion of the analysis previously mentioned.

Pending the next overhaul, it is recommended that the annual inspection of at least two of the legs by British M.O.D. be continued. Results of these inspections should be forwarded to CHESNAVFAC-ENGCOM for inclusion in mooring maintenance files.

**4.2 Sixth Class Moorings.** Records and conversations with British M.O.D. in Holy Loch confirmed that regular routine inspections, maintenance, and overhauls are performed on these moorings.

It is recommended that any change in the location, type, or number of these moorings be reported to the appropriate activities (including CHESNAVFACENGCOM) so that an accurate inventory of mooring facilities may be maintained.

**4.3 Navigation Buoys.** These buoys should remain in excellent condition under the current program of inspection and maintenance administered by the British Navy.



**ANNEX A**  
**AFDB-7 MOORING INSPECTION REPORTS**  
**INSPECTION REPORT FOR EACH LEG**  
**TRANSIT FIXES**

MOORING INSPECTION REPORT					
1. FACILITY NAVACTDET, HOLY LOCH, UK		2. MOORING NO. AFDB-7	3. TYPE/CLASS MOORING Special Dry Dock	4. LEG NUMBER: 1	
5. INSPECTION	DATE 18-24 Jun 82	DIVERS PRONIA	WATER DEPTH	ENGINEER M. M. WALTER	INITIALS

Note 1: First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

Note 2: D = Double link measurement, S = Single link measurement

Note 3: UNABLE TO REACH THIS PORTION OF LEG - UNDER DECK OVERHANG

# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET, HOLY LOCH, UK	2. MOORING NO AFDB-7	3. TYPE/CLASS MOORING Special Dry Dock	4. LEG NUMBER: 1
5. INSPECTION	DATE 18-24 Jun 82	DIVERS PRONIA	ENGINEER M.M. WALTER
		WATER DEPTH	INITIALS

## CATENARY DATA:

A = 80°

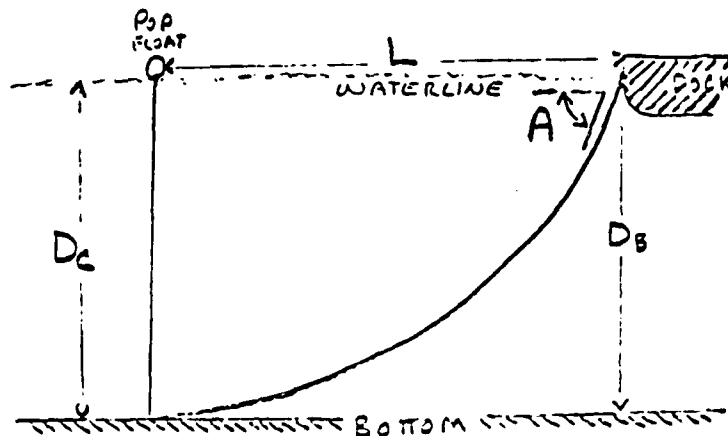
L =        ft UNABLE TO MEASURE

D<sub>B</sub> = 84.6 ft

D<sub>C</sub> = 84.6 ft

NOTES: Depths @ Mean Low Water Springs

"A" recorded in winds 10 KTS  
or less



## COMMENTS:

## CONFIGURATION, Pad Eye-To-Waterline:

Not OBSERVED

## OTHER DATA:

Relative Bearing: 000° at deck edge

N/A deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.

# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET, HOLY LOCH, UK		2. MOORING NO AFDB-7	3. TYPE/CLASS MOORING Special Dry Dock	4. LEG NUMBER: 2
5. INSPECTION	DATE 18-24 JUN 82	DIVERS PRONIA	WATER DEPTH	ENGINEER M.M. WALTER
				INITIALS

COMPONENT	Link # or Depth, ft (Note 1)	CONDITION (Note 2)			Voltmeter reading, mV	Comments
		+90%	+80%	-80%		
SECTION I	# 15/16	✓D				ALL CHAIN IN SECTION I IS
"	# 20/21	✓D				COATED - GOOD CONDITION
SECTION II	# 24		5 1/16" D			
"	# 25		5" D			
"	# 26	5 7/16" D				
"	# 27	5 1/16" D				
"	# 28	5 3/4" D				
SECTION III	20'	✓D				
"	40'	✓D				
"	60'	✓D				
"	80'	✓D				SILTY/MUDDY BOTTOM - DIVER COULD PUT HAND IN 1 1/2'-2'

Note 1: First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

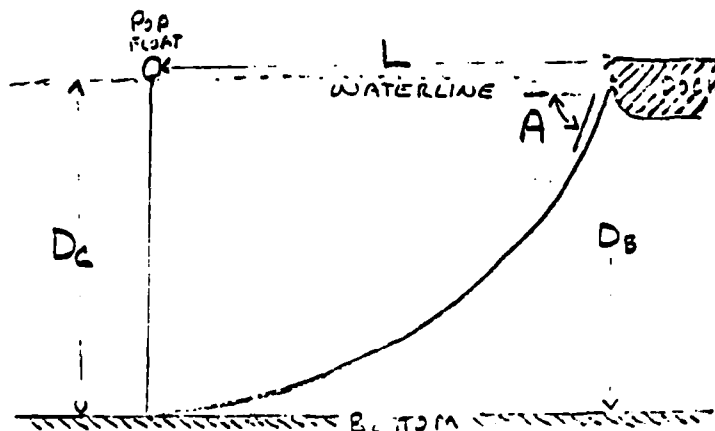
Note 2: D = Double Link measurement, S = Single Link measurement

# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET, HOLY LOCH, UK		2. MOORING NO. AFDB-7	3. TYPE/CLASS MOORING Special Dry Dock	4. LEG NUMBER: 2	
5. INSPECTION	DATE 18-24 JUN 82	DIVERS PRONIA	WATER DEPTH	ENGINEER M.M. WALTER	INITIALS

## CATENARY DATA:

$A = 59^\circ$   $A' = 62^\circ$   
 $L = 90$  ft (USS HUNLEY  
DIVERS, APR 82)  
 $D_B = 94.8$  ft  
 $D_C = 96.8$  ft



NOTES: Depths @ Mean Low Water Springs

"A" recorded in winds 10 KTS  
or less

A' RECORDED IN WINDS 30-40 KTS

## COMMENTS:

## CONFIGURATION, Pad Eye-To-Waterline:

PADEYE + ANCHOR JOINING LINK + 20 LINKS TO STOPPER + 2 LINKS  
 TO CHOCK + 6 LINKS TO WATERLINE

## OTHER DATA:

Relative Bearing: 020° at deck edge

N/A deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.

# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET, HOLY LOCH, UK		2. MOORING NO AFDB-7	3. TYPE/CLASS MOORING Special Dry Dock	4. LEG NUMBER: 3
5. INSPECTION	DATE 18-21 JUL 82	DIVERS PRONIA	WATER DEPTH	ENGINEER M.M. WALTER
INITIALS				

COMPONENT	Link # or Depth, ft (Note 1)	CONDITION (Note 2)			Voltmeter reading, mV	Comments
		+90%	+80%	-80%		
SECTION I	#16/17	JD				CHAIN SLIGHTLY PITTED; ALL LINKS IN SECTION I ARE COATED
"	#22/23	JD				
SECTION II	# 24	5 1/2" D				
"	# 25		5 1/6" D			
"	# 26	5 1/6" D				
"	# 27	5 1/6" D				
"	# 28	5 1/6" D				
SECTION III	20'	JD				
	40'	JD				
	60'	JD				
	80'	JD				SLACK CHAIN ON BOTTOM

Note 1: First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

Note 2: D = Double Link measurement, S = Single Link measurement

# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET, HOLY LOCH, UK		2. MOORING NO AFDB-7	3. TYPE/CLASS MOORING Special Dry Dock	4. LEG NUMBER: 3	
5. INSPECTION	DATE 18-24 JUN 84	DIVERS PRONIA	WATER DEPTH	ENGINEER M. M. WALTER	INITIALS

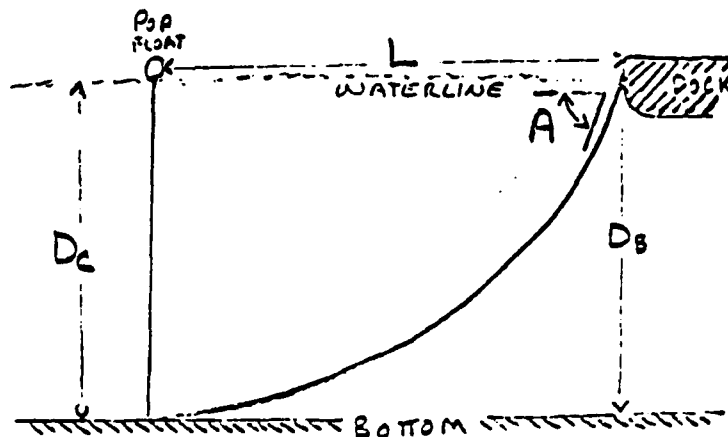
## CATENARY DATA:

A = 78° A' = 71°

L = 60 ft (USS HUNLEY  
DIVERS APR 82)

D<sub>B</sub> = 99.3 ft

D<sub>C</sub> = 98.3 ft



NOTES: Depths @ Mean Low Water Springs

"A" recorded in winds 10 KTS  
or less

A' RECORDED IN WINDS 30-40 KTS

## COMMENTS:

## CONFIGURATION, Pad Eye-To-Waterline:

PAD EYE - ANCHOR JOINING LINK + 6 LINKS + DETACHABLE LINK + 11 LINKS  
TO STOPPER + 5 LINKS TO CHOCK + 5 LINKS TO WATERLINE

## OTHER DATA:

Relative Bearing: 061° at deck edge

N/A deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.

# MOORING INSPECTION REPORT

1. FACILITY		2. MOORING NO		3. TYPE/CLASS MOORING		4. LEG NUMBER:					
NAVACTDET, HOLY LOCH, UK		AFDB-7		Special Dry Dock		4					
5. INSPECTION		DATE		DIVERS		WATER DEPTH		ENGINEER		INITIALS	
		18-24 JUN 82		COOPER				M.M. WALTER			
COMPONENT	Link # or Depth, ft (Note 1)	CONDITION (Note 2)			Voltmeter reading, mV	Comments					
		+90%	+80%	-80%							
SECTION I	NOT RECORDED	✓D				DIFFERENT TYPE OF CHAIN; BADLY PITTED UNDER COATING; BADLY RUSTED AT CHOCK; ALL LINKS IN SECTION I ARE COATED					
"											
SECTION II	# 25		5 9/16" D								
	# 26		5 5/16" D								
	# 27	5 9/16" D									
	# 28	5 1/2" D									
	# 29	5 7/16" D									
SECTION III	20'	✓D									
	40'	✓D									
	60'	✓D									
	80'	✓D									

Note 1: First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

Note 2: D = Double Link measurement, S = Single Link measurement



# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET, HOLY LOCH, UK		2. MOORING NO AFDB-7	3. TYPE/CLASS MOORING Special Dry Dock	4. LEG NUMBER: 4
5. INSPECTION	DATE 18-24 JUN 82	DIVERS COOPER	WATER DEPTH	ENGINEER M.M. WALTER
INITIALS				

## CATENARY DATA:

A = 87° A' = 77°

L = 45 ft

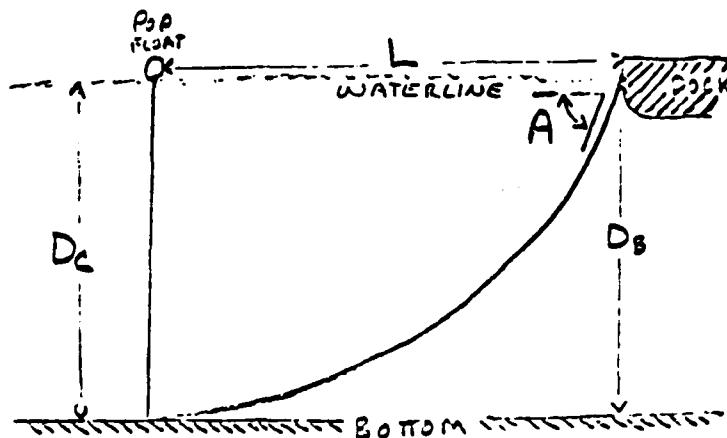
D<sub>B</sub> = 100.6 ft

D<sub>C</sub> = 97.6 ft

NOTES: Depths @ Mean Low Water Springs

"A" recorded in winds 10 KTS  
or less

A' RECORDED IN WINDS 30-40 KTS



## COMMENTS:

## CONFIGURATION, Pad Eye-To-Waterline:

PAD EYE - ANCHOR JOINING LINK + 20 LINKS TO STOPPER + 4 LINKS  
TO CHOCK + 5 LINKS TO WATERLINE

## OTHER DATA:

Relative Bearing: 050° at deck edge

N/A deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.

# MOORING INSPECTION REPORT

1. FACILITY NAVACDET, HOLY LOCH, UK		2. MOORING NO AFDB-7		3. TYPE/CLASS MOORING Special Dry Dock		4. LEG NUMBER: 5	
5. INSPECTION		DATE 18-24 JUN 82		DIVERS COOPER		WATER DEPTH	
				ENGINEER M.M. WALTER		INITIALS	

COMPONENT	Link # or Depth, ft (Note 1)	CONDITION (Note 2)			Voltmeter reading, mV	Comments
		+90%	+80%	-80%		
SECTION I	#15/16	JD				ALL LINKS IN SECTION I COATED
"	#19/20	JD				
SECTION II	# 24	5 1/2"				
	# 25		S"			
	# 26		5 1/4"			
	# 27	5 1/2"				
	# 28	5 3/4"				
SECTION III	20'	JD				
	40'	JD				
	60'	JD				
	80'	JD				HARDER BOTTOM: 4"-5" PENETRATION 8-9 LINKS LOOSE ON BOTTOM

Note 1: First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

Note 2: D = Double Link measurement, S = Single Link measurement

# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET, HOLY LOCH, UK		2. MOORING NO AFDB-7	3. TYPE/CLASS MOORING Special Dry Dock	4. LEG NUMBER: <div style="text-align: center; font-size: 1.5em;">5</div>	
5. INSPECTION	DATE 18-21 Jun 82	DIVERS COOPER	WATER DEPTH	ENGINEER M.M. WALTER	INITIALS

## CATENARY DATA:

A = 89° A' = 86°

L = 3 ft (USS HONLEY  
DIVERS APR 82)

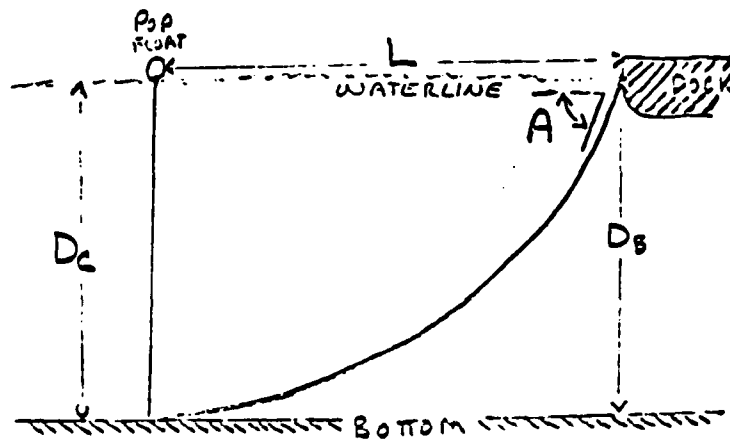
D<sub>B</sub> = 102.1 ft

D<sub>C</sub> = 102.1 ft

NOTES: Depths @ Mean Low Water Springs

"A" recorded in winds 10 KTS  
or less

A' RECORDED IN WINDS 30-40 KTS



## COMMENTS:

## CONFIGURATION, Pad Eye-To-Waterline:

PAD EYE - ANCHOR JOINING LINK + 16 LINKS TO STOPPER + 6 LINKS  
TO CHOCK + 6 LINKS TO WATERLINE

## OTHER DATA:

Relative Bearing: 100° at deck edge

N/A deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.

MOORING INSPECTION REPORT									
1. FACILITY NAVACTDET, HOLY LOCH, UK			2. MOORING NO. AFDB-7		3. TYPE/CLASS MOORING Special Dry Dock		4. LEG NUMBER: 6		
5. INSPECTION		DATE 18-24 Jun 82		DIVERS COOPER		WATER DEPTH		ENGINEER M.M. WALTER	
INITIALS									
COMPONENT	Link # or Depth, ft (Note 1)	CONDITION (Note 2)			Voltmeter reading, mV	Comments			
SECTION I	# 14/15	+90%	+80%	-80%		All LINKS IN SECTION I COATED.			
	# 22/23					GOOD CONDITION.			
	# 26								
	# 27								
	# 28								
SECTION II	# 24								
	# 30								
	20'								
	40'								
	60'								
SECTION III	80'								

Note 1: First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

Note 2: D = Double Link measurement, S = Single Link measurement

Note 1: First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

**Note 2: D = Double Link measurement, S = Single Link measurement**

# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET, HOLY LOCH, UK		2. MOORING NO AFDB-7	3. TYPE/CLASS MOORING Special Dry Dock	4. LEG NUMBER: <div style="text-align: center; font-size: 1.5em;">6</div>
5. INSPECTION	DATE 18-24 Jun 82	DIVERS COOPER	WATER DEPTH	ENGINEER M.M. WALTER
INITIALS				

## CATENARY DATA:

A = 82° A' = 65°

L = 54 ft

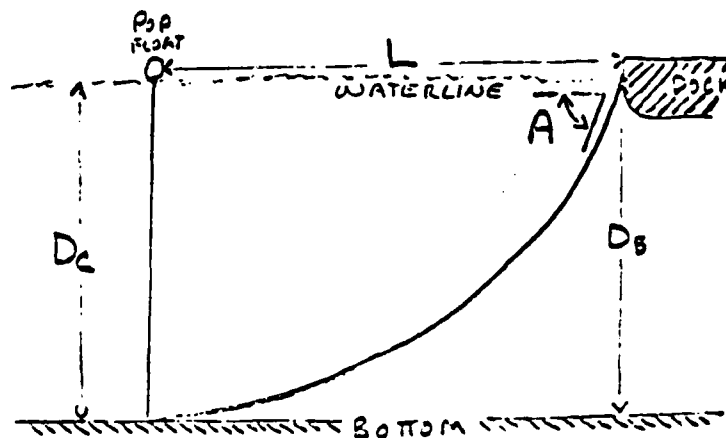
D<sub>B</sub> = 104.4 ft

D<sub>C</sub> = 102.4 ft

NOTES: Depths @ Mean Low Water Springs

"A" recorded in winds 10 KTS  
or less

A' RECORDED IN WINDS 30-40 KTS



## COMMENTS:

## CONFIGURATION, Pad Eye-To-Waterline:

PAD EYE - ANCHOR JOINING LINK + 20 LINKS TO STOPPER + 5 LINKS TO  
CHOCK + 5 LINKS TO WATERLINE

## OTHER DATA:

Relative Bearing: 070° at deck edge

N/A deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.

# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET, HOLY LOCH, UK		2. MOORING NO AFDB-7	3. TYPE/CLASS MOORING Special Dry Dock	4. LEG NUMBER: 7
5. INSPECTION	DATE 18-24 Jun 82	DIVERS PRONIA	WATER DEPTH	ENGINEER M.M. WALTER
				INITIALS

COMPONENT	Link # or Depth, ft (Note 1)	CONDITION (Note 2)			Voltmeter reading, mV	Comments
		+90%	+80%	-80%		
SECTION I	# 10/11	✓D				PARTIALLY COATED, LIGHTLY RUSTED
"	# 19/20	✓D				
SECTION II	# 24	S <sup>3/4</sup> D				
	# 25	S <sup>3/4</sup> D				
	# 26	S <sup>3/4</sup> D				
	# 27	S <sup>3/4</sup> D				
	# 28	S <sup>3/4</sup> D				
SECTION III	20'	✓D				
	40'	✓D				
	60'	✓D				
	80'	✓D				GOOD VISIBILITY SOLID BOTTOM - KNEELED ON IT

Note 1: First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

Note 2: D = Double Link measurement, S = Single Link measurement

# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET, HOLY LOCH, UK		2. MOORING NO AFDB-7	3. TYPE/CLASS MOORING Special Dry Dock	4. LEG NUMBER: <div style="text-align: center; font-size: 1.5em;">7</div>
5. INSPECTION	DATE 18-24 JUNE 84	DIVERS PRONIA	WATER DEPTH	ENGINEER M.M. WALTER
INITIALS				

## CATENARY DATA:

A = 77° A' = 55°

L = 60 ft (USS HANLEY  
DIVERS APR 82)

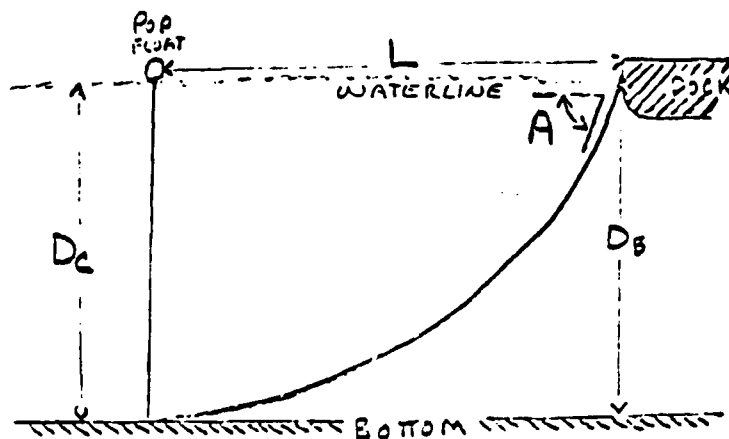
D<sub>B</sub> = 89.3 ft

D<sub>C</sub> = 89.3 ft

NOTES: Depths @ Mean Low Water Springs

"A" recorded in winds 10 KTS  
or less

A' RECORDED IN WINDS 30-40 KTS



## COMMENTS:

## CONFIGURATION, Pad Eye-To-Waterline:

PAD EYE - ANCHOR JOINING LINK + 18 LINKS TO STOPPER + 5 LINKS  
TO CHOCK + 5 LINKS TO WATERLINE

## OTHER DATA:

Relative Bearing: 070° at deck edge

N/A deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.

# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET, HOLY LOCH, UK		2. MOORING NO AFDB-7		3. TYPE/CLASS MOORING Special Dry Dock		4. LEG NUMBER: 8	
5. INSPECTION		DATE 18-24 June 82		DIVERS PRONIA		WATER DEPTH	
				ENGINEER M.M. WALTER		INITIALS	

COMPONENT	Link # or Depth, ft (Note 1)	CONDITION (Note 2)			Voltmeter reading, mV	Comments
		+90%	+80%	-80%		
SECTION I	#12/13	✓D				MEDIUM RUST
"	#21/22	✓D				
SECTION II	#26	6 1/16" D				NEW CHAIN
"	#27	5 15/16" D				
"	#28	6" D				
"	#29	6 1/16" D				
"	#30	6 1/16" D				
SECTION III	20'	✓D				
	40'	✓D				
	60'	✓D				
	80'	✓D				

Note 1: First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

Note 2: D = Double Link measurement, S = Single Link measurement



# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET, HOLY LOCH, UK	2. MOORING NO AFDB-7	3. TYPE/CLASS MOORING Special Dry Dock	4. LEG NUMBER: 8
5. INSPECTION	DATE 18-24 JUN 82	DIVERS RONIA	ENGINEER M.M. WALTER
			INITIALS

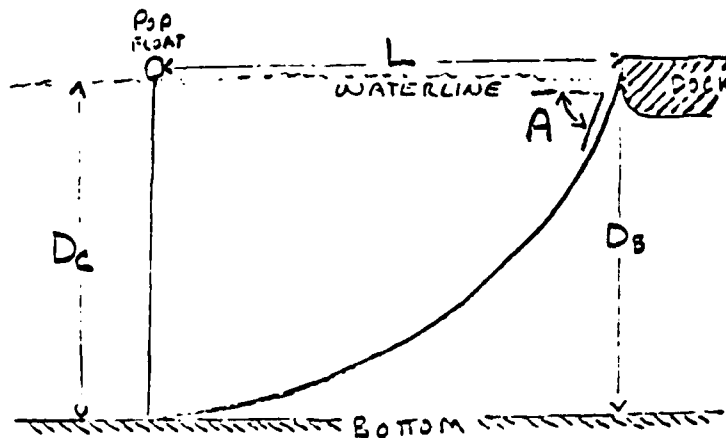
## CATENARY DATA:

A = 66° A' = 33°

L = 120 ft

D<sub>B</sub> = 83 ft

D<sub>C</sub> = 87 ft



NOTES: Depths @ Mean Low Water Springs

"A" recorded in winds 10 KTS  
or less

A' RECORDED IN WINDS 30-40 KTS

## COMMENTS:

## CONFIGURATION, Pad Eye-To-Waterline:

PAD EYE - ANCHOR JOINING LINKS + 17 LINKS TO STOPPER + 2 LINKS +  
DETACHABLE LINK + 3 LINKS TO CHOCK + 7 LINKS TO WATERLINE

## OTHER DATA:

Relative Bearing: 080° at deck edge

N/A deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.

# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET, HOLY LOCH, UK		2. MOORING NO AFDB-7	3. TYPE/CLASS MOORING Special Dry Dock	4. LEG NUMBER: 9
5. INSPECTION	DATE 18-24 Jun 82	DIVERS PRONIA	WATER DEPTH	ENGINEER M.M. WALTER
INITIALS				

COMPONENT	Link # or Depth, ft (Note 1)	CONDITION (Note 2)			Voltmeter reading, mV	Comments
		+90%	+80%	-80%		
SECTION I	#12/13	JD				MEDIUM RUST / FLAKY
"	#19/20	JD				
SECTION II	#24	S 1/4" D				
"	#25	S 1/4" D				
"	#26	S 1/4" D				
"	#27	S 1/4" D				
"	#28	S 1/4" D				
"	#29	S 1/4" D				
SECTION III	20'	JD				LEG DROPS VERTICALLY AT SURFACE
"	40'	JD				BUT TENDS OUT AT A MUCH GREATER SLOPE
"	60'	JD				
"	80'	JD				
"						
"						
"						

Note 1: First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

Note 2: D = Double Link measurement, S = Single Link measurement

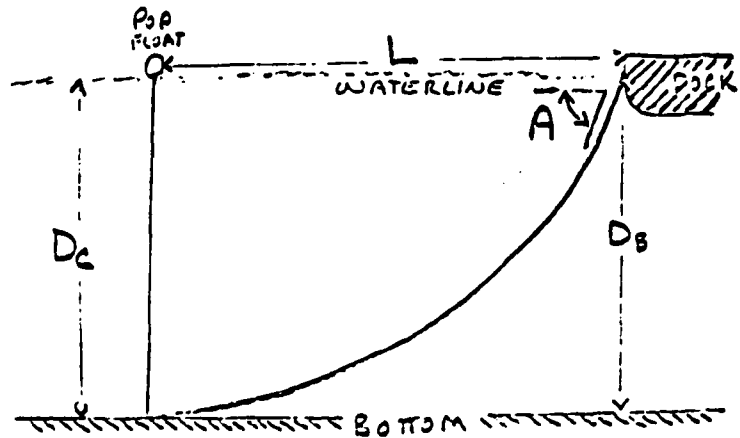
# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET, HOLY LOCH, UK		2. MOORING NO AFDB-7	3. TYPE/CLASS/MOORING Special Dry Dock	4. LEG NUMBER: 9	
5. INSPECTION	DATE 18-24 Jun 82	DIVERS PRONIA	WATER DEPTH	ENGINEER M.M. WALTER	INITIALS

## CATENARY DATA:

$A = 85^\circ$   
 $L = 57 \text{ ft}$   
 $D_B = 84.4 \text{ ft}$   
 $D_C = 87.4 \text{ ft}$

NOTES: Depths @ Mean Low Water Springs  
 "A" recorded in winds 10 KTS  
 or less



## COMMENTS:

## CONFIGURATION, Pad Eye-To-Waterline:

PAD EYE - ANCHOR JOINING LINK + 18 LINKS TO STOPPER + 1 LINK +  
 DETACHABLE LINK + 3 LINKS TO CHOCK + 6 LINKS TO WATERLINE

## OTHER DATA:

Relative Bearing:  $090^\circ$  at deck edge  
 $120^\circ$  deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.

# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET, HOLY LOCH, UK		2. MOORING NO AFDB-7	3. TYPE/CLASS MOORING Special Dry Dock	4. LEG NUMBER: 10
5. INSPECTION	DATE 18-24 JUN 82	DIVERS PRONIA	WATER DEPTH	ENGINEER M.M. WALT
				INITIALS

COMPONENT	Link # or Depth, ft (Note 1)	CONDITION (Note 2)			Voltmeter reading, mV	Comments
		+90%	+80%	-80%		
SECTION I	#5/6	✓D				ALL COATED TO CHECK; BADLY RUSTED AND FLAKY; 1/4" RUST PRODUCT; AT SECOND DETACH. LINK: STUD ALMOST GONE
"	#17/18	✓D				
SECTION II	#23	5 3/4" D				
"	#24	5 3/4" D				
"	#25		5 5/8" D			
"	#26	5 7/8" D				
"	#27	5 5/8" D				
"	#28	5 5/8" D				
SECTION III	20'	✓D				GOOD CATENARY: MAINTAINS SAME ANGLE FOR A LONG WAY
"	40'	✓D				
"	60'	✓D				
"	80'	✓D				

Note 1: First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

Note 2: D = Double Link measurement, S = Single Link measurement

# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET, HOLY LOCH, UK		2. MOORING NO AFDB-7	3. TYPE/CLASS MOORING Special Dry Dock	4. LEG NUMBER: <div style="text-align: center; font-size: 1.2em;">10</div>	
5. INSPECTION	DATE 18-24 JUN 82	DIVERS PRONIA	WATER DEPTH	ENGINEER M.M. WALTER	INITIALS

## CATENARY DATA:

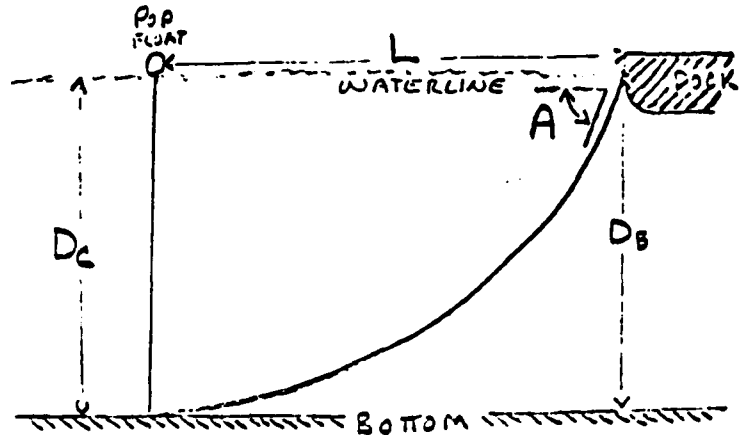
A = 78°

L = 54 ft

D<sub>B</sub> = 84.6 ft

D<sub>C</sub> = 81.6 ft

NOTES: Depths @ Mean Low Water Springs  
"A" recorded in winds 10 KTS  
or less



## COMMENTS:

## CONFIGURATION, Pad Eye-To-Waterline:

PAD EYE-ANCHOR JOINING LINK + 8 LINKS + DETACHABLE LINK +  
9 LINKS TO STOPPER + DETACHABLE LINK + 3 LINKS TO  
CHOCK + 6 LINKS TO WATERLINE

## OTHER DATA:

Relative Bearing: 120° at deck edge

160° deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.

# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET, HOLY LOCH, UK		2. MOORING NO AFDB-7	3. TYPE/CLASS MOORING Special Dry Dock	4. LEG NUMBER: 11
5. INSPECTION	DATE 18-24 JUN 82	DIVERS PRONIA / COOPER	WATER DEPTH	ENGINEER M.M. WALTER
				INITIALS

COMPONENT	Link # or Depth, ft (Note 1)	CONDITION (Note 2)			Voltmeter reading, mv	Comments
		+90%	+80%	-80%		
SECTION I	#6/7	✓D				SOME FLAKING.
"	#22/23	✓D				MEDIUM RUST
SECTION II	#24	5 1/2" D				
"	#25	5 5/8" D				
"	#26	5 1/8" D				
"	#27	5 3/8" D				
"	#28	5 5/8" D				
"	#29	5 1/2" D				
SECTION III	20'	✓D				
"	40'	✓D				
"	60'	✓D				
"	80'	✓D				
"						
"						
"						
"						

Note 1: First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

Note 2: D = Double Link measurement, S = Single Link measurement

# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET, HOLY LOCH, UK		2. MOORING NO AFDB-7	3. TYPE/CLASS MOORING Special Dry Dock	4. LEG NUMBER: 11	
5. INSPECTION	DATE 18-21 JUN 82	DIVERS PRONIA/COOPER	WATER DEPTH	ENGINEER M.M. WALTER	INITIALS

## CATENARY DATA:

A = 59° A', A" = 43°, 61°

L = 88 ft

D<sub>B</sub> = 78.9 ft

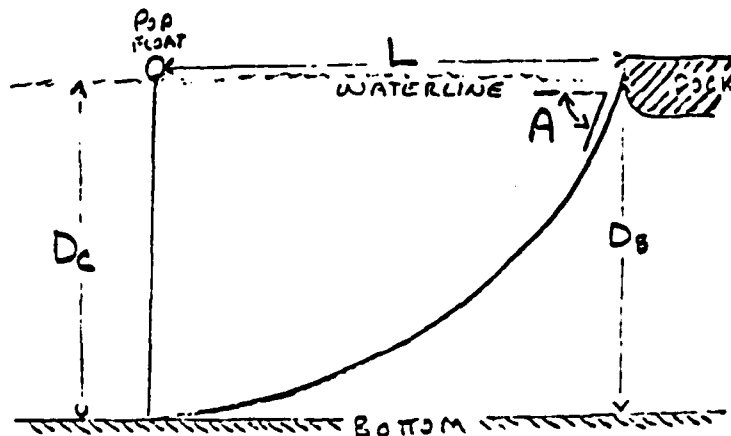
D<sub>C</sub> = 82.9 ft

NOTES: Depths @ Mean Low Water Springs

"A" recorded in winds 10 KTS  
or less

A' and A" recorded in winds 30-40 KTS

## COMMENTS:



## CONFIGURATION, Pad Eye-To-Waterline:

PAD EYE - ANCHOR JOINING LINK + 18 LINKS TO STOPPER + 4 LINKS  
TO CHOCK + 7 LINKS TO WATERLINE

## OTHER DATA:

Relative Bearing: 180° at deck edge

N/A deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.

[illegible]

Note 1: First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

**Note 2: D = Double Link measurement, S = Single Link measurement**

NOTE 3: UNABLE TO REACH TAIL PORTION OF LEG - UNDER DECK OVERHANG



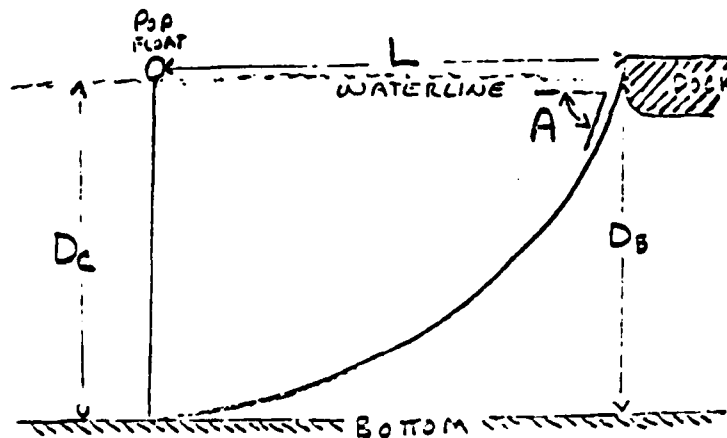
# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET, HOLY LOCH, UK		2. MOORING NO AFDB-7	3. TYPE/CLASS MOORING Special Dry Dock	4. LEG NUMBER: 12	
5. INSPECTION	DATE 18-21 JUN 82	DIVERS PRONIA/COOPER	WATER DEPTH	ENGINEER M.M. WALTER	INITIALS

## CATENARY DATA:

$A = 75^\circ$   
 $L = 60 \text{ ft}$   
 $D_B = 77.5 \text{ ft}$   
 $D_C = 77.5 \text{ ft}$

NOTES: Depths @ Mean Low Water Springs  
 "A" recorded in winds 10 KTS  
 or less



## COMMENTS:

## CONFIGURATION, Pad Eye-To-Waterline:

Not OBSERVED

## OTHER DATA:

Relative Bearing: 180° at deck edge  
N/A deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.

# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET, HOLY LOCH, UK		2. MOORING NO AFDB-7		3. TYPE/CLASS MOORING Special Dry Dock		4. LEG NUMBER: 13	
5. INSPECTION		DATE 18-24 Jun 82		DIVERS DAHL / AYLWORTH		WATER DEPTH ENGINEER M. M. WALTER	
INITIALS							

COMPONENT	Link # or Depth, ft (Note 1)	CONDITION (Note 2)			Voltmeter reading, mV	Comments
		+90%	+80%	-80%		
SECTION I	#1/2	JD				SLIGHTLY RUSTED
"	#6/7	JD				
"	#18/19	JD				
"	#21/22	JD				
SECTION II	#25	S 1/8" D				
"	#26	S 1/4" D				
"	#27	S 1/8" D				
"	#28	S 3/8" D				
"	#29	S 1/2" D				
SECTION III	20'	JD			668	
"	40'	JD			670	
"	60'	JD			667	CLEAN, DULL CHAIN; VISIBILITY AT BOTTOM 2'; SILTY-SANDY BOTTOM
"	80'	JD			663	

Note 1: First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

Note 2: D = Double Link measurement, S = Single Link measurement

# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET, HOLY LOCH, UK		2. MOORING NO AFDB-7	3. TYPE/CLASS MOORING Special Dry Dock	4. LEG NUMBER: 13	
5. INSPECTION	DATE 18-24 JUN 82	DIVERS DAHL/AYLESWORTH	WATER DEPTH	ENGINEER M.M. WALTER	INITIALS

## CATENARY DATA:

A = 79°

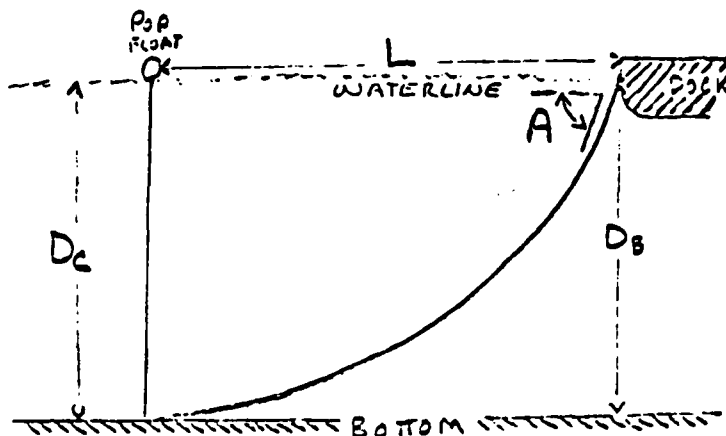
L = 39 ft

D<sub>B</sub> = 80.3 ft

D<sub>C</sub> = 80.3 ft

NOTES: Depths @ Mean Low Water Springs

"A" recorded in winds 10 KTS  
or less



## COMMENTS:

## CONFIGURATION, Pad Eye-To-Waterline:

PAD EYE-ANCHOR JOINING LINK + 15 LINKS + DETACHABLE LINK +  
4 LINKS TO STOPPER + 3 LINKS TO CHOCK +  
6 LINKS TO WATERLINE

## OTHER DATA:

Relative Bearing: 175° at deck edge

170° deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.

# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET, HOLY LOCH, UK		2. MOORING NO AFDB-7	3. TYPE/CLASS MOORING Special Dry Dock	4. LEG NUMBER: 14
5. INSPECTION	DATE 18-24 JUN 82	DIVERS DAHL / AYLSWORTH	WATER DEPTH	ENGINEER M.M. WALTER
				INITIALS

COMPONENT	Link # or Depth, ft (Note 1)	CONDITION (Note 2)			Voltmeter reading, mV	Comments
		+90%	+80%	-80%		
SECTION I	# 1/2	JD				
"	# 9/10	JD				
SECTION II	# 23	S 5/8" D				
"	# 24		S 5/8" D			
"	# 25		S 5/8" D			
"	# 26	S 5/8" D				
"	# 27	S 5/8" D				
"	# 28	S 5/8" D				
SECTION III	20'	JD			694	
"	40'	JD			677	
"	60'	JD			679	
"	80'	JD			668	

Note 1: First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

Note 2: D = Double Link measurement, S = Single Link measurement

# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET, HOLY LOCH, UK		2. MOORING NO AFDB-7	3. TYPE/CLASS MOORING Special Dry Dock	4. LEG NUMBER: 14	
5. INSPECTION	DATE 18-24 JUN 82	DIVERS DAHL / AYLSWORTH	WATER DEPTH	ENGINEER M.M. WALTER	INITIALS

## CATENARY DATA:

A = 74°

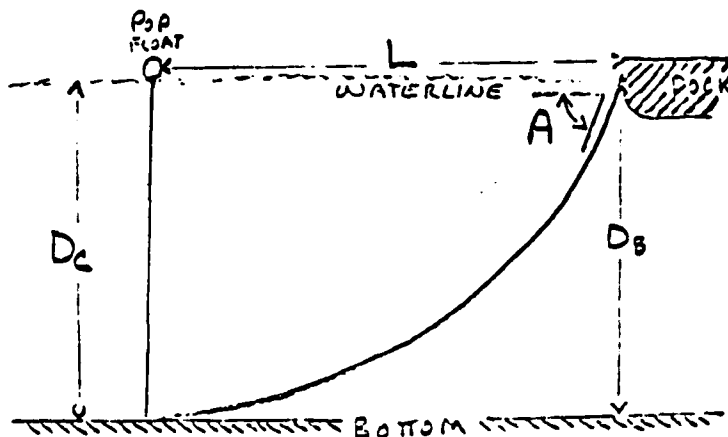
L = 54 ft

D<sub>B</sub> = 80 ft

D<sub>C</sub> = 80 ft

NOTES: Depths @ Mean Low Water Springs

"A" recorded in winds 10 KTS  
or less



## COMMENTS:

## CONFIGURATION, Pad Eye-To-Waterline:

PAD EYE - ANCHOR JOINING LINK + 17 LINKS TO STOPPER + 1 LINK  
+ DETACHABLE LINK + 3 LINKS TO CHOCK +  
6 LINKS TO WATERLINE

## OTHER DATA:

Relative Bearing: 220° at deck edge

235° deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.

# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET, HOLY LOCH, UK		2. MOORING NO AFDB-7	3. TYPE/CLASS MOORING Special Dry Dock	4. LEG NUMBER: 15
5. INSPECTION	DATE 18-24 Jun 82	DIVERS DAHL / AYLESWORTH	WATER DEPTH	ENGINEER M.M. WALTER
				INITIALS

COMPONENT	Link # or Depth, ft (Note 1)	CONDITION (Note 2)			Voltmeter reading, mV	Comments
		+90%	+80%	-80%		
SECTION I	#10/11	√D				MEDIUM RUST
"	#17/18	√D				
SECTION II	#24	5 1/2" D				
"	#25	5 9/16" D				
"	#26	5 1/2" D				
"	#27	5 7/8" D				
"	#28	5 1/2" D				
SECTION III	20'	√D			718	CHAIN TENDS STRAIGHT
"	40'	√D			699	DOWN, HITS BOTTOM AND RUNS OUT
"	60'	√D			689	
"	80'	√D			681	
"	BELOW MUDLINE	√S				4 LINKS LIFTED FROM MUD

Note 1: First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

Note 2: D = Double Link measurement, S = Single Link measurement

# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET, HOLY LOCH, UK		2. MOORING NO AFDB-7	3. TYPE/CLASS MOORING Special Dry Dock	4. LEG NUMBER: 15	
5. INSPECTION	DATE 18-24 JUN 82	DIVERS DAHL/AYLEWORTH	WATER DEPTH	ENGINEER M.M. WALTER	INITIALS

## CATENARY DATA:

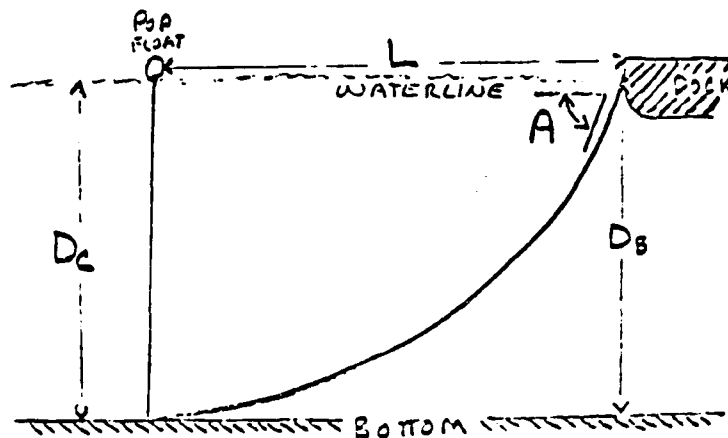
A = 91°

L = 3 ft

D<sub>B</sub> = 79.2 ft

D<sub>C</sub> = 79.2 ft

NOTES: Depths @ Mean Low Water Springs  
"A" recorded in winds 10 KTS  
or less



## COMMENTS:

## CONFIGURATION, Pad Eye-To-Waterline:

PAD EYE-ANCHOR JOINING LINK + 18 LINKS + DETACHABLE LINK  
+ 1 LINK TO STOPPER + 3 LINKS TO CHOCK +  
5 LINKS TO WATERLINE

## OTHER DATA:

Relative Bearing: 230° at deck edge

N/A deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.

# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET, HOLY LOCH, UK		2. MOORING NO AFDB-7	3. TYPE/CLASS MOORING Special Dry Dock	4. LEG NUMBER: 16
5. INSPECTION	DATE 18-24 Jun 82	DIVERS DAHL / AYLSWORTH	WATER DEPTH	ENGINEER M.M. WALTER
				INITIALS

COMPONENT	Link # or Depth, ft (Note 1)	CONDITION (Note 2)			Voltmeter reading, mv	Comments
		+90%	+80%	-80%		
SECTION I	#10/11	✓D				MOST LINKS BADLY RUSTED;
"	#19/20	✓D				FLAKES EASILY.
"	#20/21	✓D				
SECTION II	#23	5/8" D				
"	#24	5/8" D				
"	#25	5/8" D				
"	#26	5/8" D				
"	#27	5/8" D				
SECTION III	20'	✓D			666	
"	40'	✓D			672	GROWTH STOPS AT 40' DEPTH
"	60'	✓D			684	
"	80'	✓D			681	

Note 1: First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

Note 2: D = Double Link measurement, S = Single Link measurement



# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET, HOLY LOCH, UK	2. MOORING NO AFDB-7	3. TYPE/CLASS MOORING Special Dry Dock	4. LEG NUMBER: 16
5. INSPECTION	DATE 18-24 Jun 82	DIVERS DAHL / AYLWORTH	ENGINEER M.M. WALTER
		WATER DEPTH	INITIALS

## CATENARY DATA:

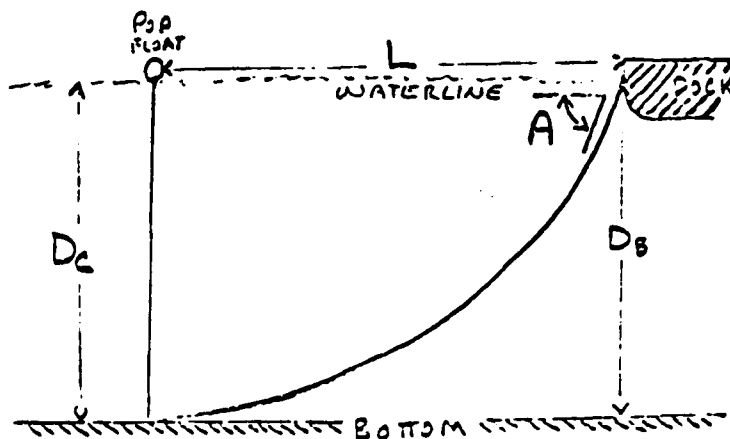
A = 84°

L = 33 ft

D<sub>B</sub> = 74.7 ft

D<sub>C</sub> = 74.7 ft

NOTES: Depths @ Mean Low Water Springs  
"A" recorded in winds 10 KTS  
or less



## COMMENTS:

## CONFIGURATION, Pad Eye-To-Waterline:

PAD EYE - ANCHOR TOWING LINK + 14 LINKS + DETACHABLE LINK + 3  
LINKS TO STOPPER + 4 LINKS TO CHOCK + 5 LINKS  
TO WATERLINE

## OTHER DATA:

Relative Bearing: 195° at deck edge

225° deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.

# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET, HOLY LOCH, UK		2. MOORING NO AFDB-7	3. TYPE/CLASS MOORING Special Dry Dock	4. LEG NUMBER: 17
5. INSPECTION	DATE 18-24 JUN 82	DIVERS SUTTON/JELLO	WATER DEPTH	ENGINEER M.M. WALTER
				INITIALS

COMPONENT	Link # or Depth, ft (Note 1)	CONDITION (Note 2)			Voltmeter reading, mV	Comments
		+90%	+80%	-80%		
SECTION I	#12/13	✓D				MEDIUM-TO-HEAVY RUST
SECTION II	#24	✓D				
"	#25		✓D			
"	#26		✓D			
"	#27	S <sup>5</sup> / <sub>8</sub> "D				
"	#28	S <sup>9</sup> / <sub>16</sub> "D				
"	#29	S <sup>5</sup> / <sub>8</sub> "D				
"	#30		S <sup>5</sup> / <sub>16</sub> "D			
"	#31	S <sup>5</sup> / <sub>16</sub> "D				
SECTION III	20'	✓D			677	
"	40'	✓D			668	
"	60'	✓D			676	
"	80'	✓D			675	
"						
"						

Note 1: First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

Note 2: D = Double Link measurement, S = Single Link measurement

# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET, HOLY LOCH, UK		2. MOORING NO AFDB-7	3. TYPE/CLASS MOORING Special Dry Dock	4. LEG NUMBER: 17
5. INSPECTION	DATE 18-24 JUN 82	DIVERS SUTTON/JELLO	WATER DEPTH	ENGINEER M.M. WALTER
			INITIALS	

## CATENARY DATA:

A = 83°

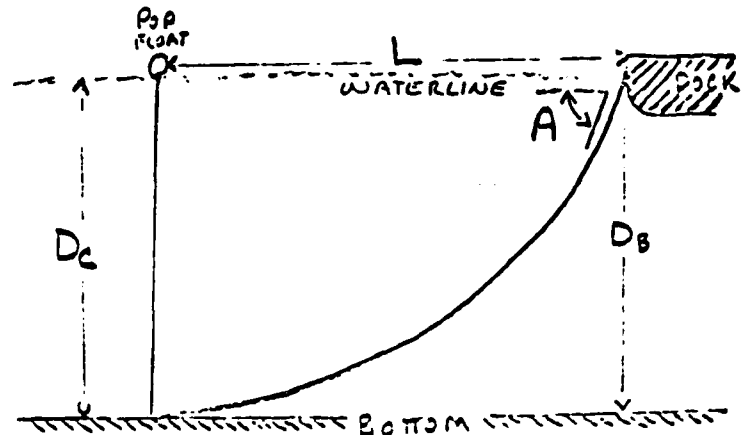
L = 39 ft

D<sub>B</sub> = 75.6 ft

D<sub>C</sub> = 78.6 ft

NOTES: Depths @ Mean Low Water Springs

"A" recorded in winds 10 KTS  
or less



## COMMENTS:

## CONFIGURATION, Pad Eye-To-Waterline:

PAOEYE - ANCHOR JOINING LINK + 16 LINKS + DETACHABLE LINK  
+ 6 LINKS TO STOPPER + 3 LINKS TO CHOCK  
+ 5 LINKS TO WATERLINE

## OTHER DATA:

Relative Bearing: 185° at deck edge

220° deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.

# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET, HOLY LOCH, UK		2. MOORING NO AFDB-7	3. TYPE/CLASS MOORING Special Dry Dock	4. LEG NUMBER: 18
5. INSPECTION	DATE 1824 JUN 82	DIVERS SUTTON/JELLO	WATER DEPTH	ENGINEER M.M. WALTER
				INITIALS

COMPONENT	Link # or Depth, ft (Note 1)	CONDITION (Note 2)			Voltmeter reading, mV	Comments
		+90%	+80%	-80%		
SECTION I	#19/20	✓D				No STOPPER,
"	#23/24	✓D				LIGHTLY RUSTED
SECTION II	#24	5 5/8" D				
"	#25	5 7/8" D				
"	#26	5 1/2" D				
"	#27	5 5/8" D				
"	#28	5 5/8" D				
SECTION III	20'	✓D			660	
"	40'	✓D			675	
"	60'	✓D			675	
"	80'	✓D			675	CHAIN LOOKS GOOD

Note 1: First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

Note 2: D = Double Link measurement, S = Single Link measurement

# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET, HOLY LOCH, UK	2. MOORING NO AFDB-7	3. TYPE/CLASS MOORING Special Dry Dock	4. LEG NUMBER: 18
5. INSPECTION	DATE 18-24 JUN 82	DIVERS SUTTON/JELLO	ENGINEER M.M. WALTER
		WATER DEPTH	INITIALS

## CATENARY DATA:

A = 87°

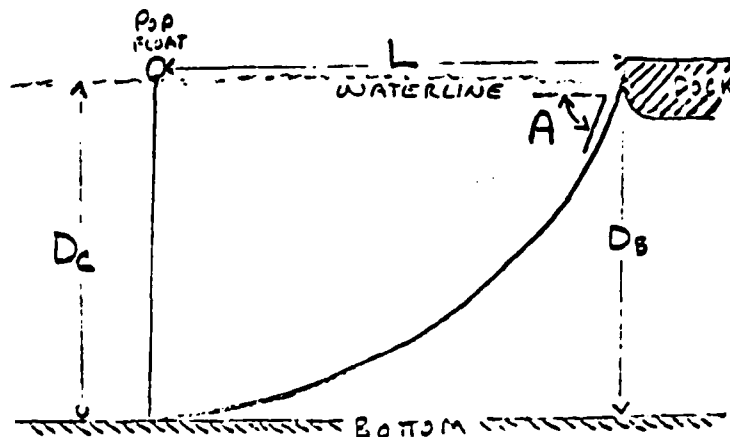
L = 18 ft

D<sub>B</sub> = 77.4 ft

D<sub>C</sub> = 77.4 ft

NOTES: Depths @ Mean Low Water Springs

"A" recorded in winds 10 KTS  
or less



## COMMENTS:

## CONFIGURATION, Pad Eye-To-Waterline:

PAD EYE - ANCHOR JOINING LINK + 23 LINKS TO CHOCK +  
5 LINKS TO WATERLINE

— NO STOPPER

## OTHER DATA:

Relative Bearing: 205° at deck edge

220° deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.

# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET, HOLY LOCH, UK		2. MOORING NO AFDB-7	3. TYPE/CLASS MOORING Special Dry Dock	4. LEG NUMBER: 19
5. INSPECTION	DATE 18-24 Jun 82	DIVERS SUTTON/JELLO	WATER DEPTH	ENGINEER M.M. WALTER
				INITIALS

COMPONENT	Link # or Depth, ft (Note 1)	CONDITION (Note 2)			Voltmeter reading, mV	Comments
		+90%	+80%	-80%		
SECTION I	#10/11	VD				RUSTED AND FLAKY;
"	#19/20	VD				POOR CONDITION
SECTION II	#24	S 1/8" D				
"	#25	S 1/8" D				
"	#26	S 1/2" D				
"	#27	S 5/8" D				
"	#28	S 5/8" D				
SECTION III	20'	JD			651	CHAIN TENDS STRAIGHT DOWN WITH APPROXIMATELY 10 LINKS SLACK ON BOTTOM
"	40'	JD			666	
"	60'	JD			679	
"	80'	JD			682	
"	Below MUDLINE		2 1/2" S			CHAIN PULLED OUT OF MUD

Note 1: First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

Note 2: D = Double Link measurement, S = Single Link measurement

# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET, HOLY LOCH, UK	2. MOORING NO AFDB-7	3. TYPE/CLASS MOORING Special Dry Dock	4. LEG NUMBER: <div style="text-align: center; font-size: 1.5em;">19</div>
5. INSPECTION	DATE 18-24 Jun 82	DIVERS SUTTON/JELLO	ENGINEER M.M. WALTER
		WATER DEPTH	INITIALS

## CATENARY DATA:

A = 88°

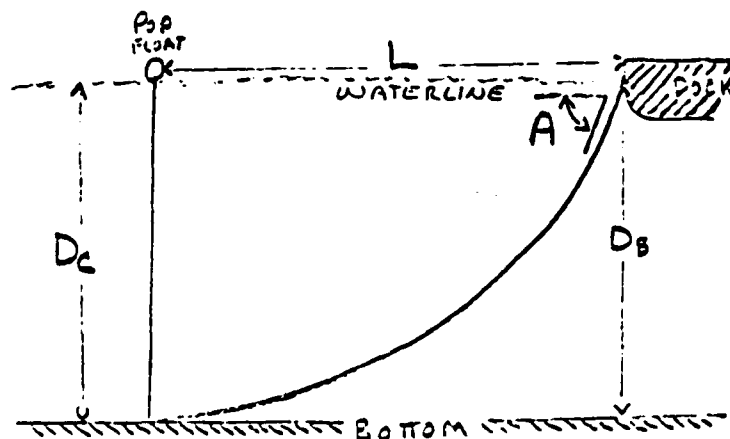
L = 0 ft

D<sub>B</sub> = 76.5 ft

D<sub>C</sub> = 78.5 ft

NOTES: Depths @ Mean Low Water Springs

"A" recorded in winds 10 KTS  
or less



## COMMENTS:

## CONFIGURATION, Pad Eye-To-Waterline:

PAD EYE-ANCHOR JOINING LINK + 16 LINKS TO STOPPER +  
6 LINKS TO CHOCK + 6 LINKS TO WATERLINE

## OTHER DATA:

Relative Bearing: 285° at deck edge

N/A deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.

# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET, HOLY LOCH, UK		2. MOORING NO AFDB-7	3. TYPE/CLASS MOORING Special Dry Dock	4. LEG NUMBER: 20
5. INSPECTION	DATE 18-24 June 86	DIVERS SUTTON/JELLO	WATER DEPTH	ENGINEER M.M. WALTER
				INITIALS

COMPONENT	Link # or Depth, ft (Note 1)	CONDITION (Note 2)			Voltmeter reading, mV	Comments
		+90%	+80%	-80%		
SECTION I	#12/13	JD				EXTREMELY BADLY RUSTED; MUCH DEBRIS LYING ON CHAIN
"	#23/24	JD				
SECTION II	#27	5 1/2" D				
"	#28	5 1/2" D				
"	#29		5 1/2" D			
"	#30		5 1/2" D			
"	#31	5 1/2" D				
"	#32	5 1/2" D				
SECTION III	20'	JD			643	
"	40'	JD			651	
"	60'	JD			663	
"	80'	JD			664	2" PIPE LYING ON TOP OF CHAIN AT BOTTOM

Note 1: First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

Note 2: D = Double Link measurement, S = Single Link measurement



# MOORING INSPECTION REPORT

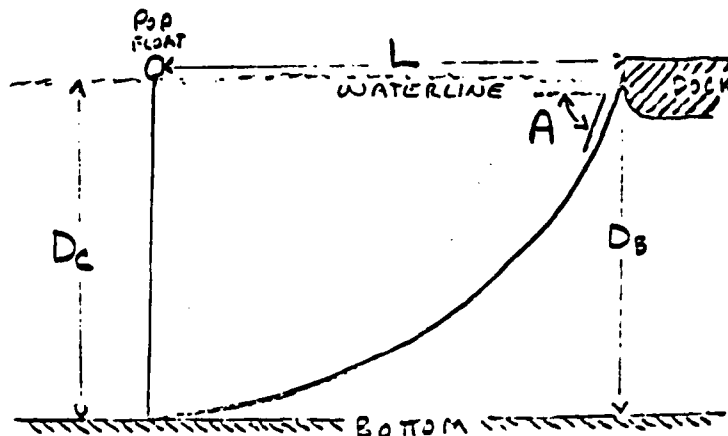
1. FACILITY NAVACTDET, HOLY LOCH, UK		2. MOORING NO AFDB-7	3. TYPE/CLASS MOORING Special Dry Dock	4. LEG NUMBER: 20
5. INSPECTION	DATE 18-24 Jun 82	DIVERS SUTTON/JELLO	WATER DEPTH	ENGINEER M.M. WALTER
INITIALS				

## CATENARY DATA:

$A = 92^\circ$   
 $L = 12 \text{ ft}$   
 $D_B = 78.3 \text{ ft}$   
 $D_C = 82.3 \text{ ft}$

NOTES: Depths @ Mean Low Water Springs

"A" recorded in winds 10 KTS or less



## COMMENTS:

## CONFIGURATION, Pad Eye-To-Waterline:

PAD EYE-ANCHOR JOINING LINK + 17 LINKS + DETACHABLE LINK +  
 4 LINKS TO STOPPER + 4 LINKS TO CHOCK +  
 6 LINKS TO WATERLINE

## OTHER DATA:

Relative Bearing:  $285^\circ$  at deck edge  
 $305^\circ$  deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.

MOORING INSPECTION REPORT									
1. FACILITY			2. MOORING NO		3. TYPE/CLASS MOORING		4. LEG NUMBER:		
NAVACTDET, HOLY LOCH, UK			AFDB-7		Special Dry Dock		21		
5. INSPECTION		DATE	DIVERS		WATER DEPTH	ENGINEER	INITIALS		
		1824JUN82	SUTTON/JELLO			M.M. WALTER			
COMPONENT	Link # or Depth, ft (Note 1)	CONDITION (Note 2)		Voltmeter reading, mV	Comments				
SECTION I	NOT RECORDED	+90%	+80% -80%		HEAVY RUST; MUCH DEBRIS AROUND CHAIN				
	#23	5 1/4" D							
"	#24	5 5/8" D							
"	#25	5 7/8" D							
"	#26	5 5/8" D							
"	#27	5 3/4" D							
"	#28	5 3/4" D							
SECTION III	20'	VD		645	CHAIN DROPS STRAIGHT DOWN THEN RAPIDLY OUT				
"	40'	VD		658					
"	60'	VD		665					
"	80'	VD		667					

Note 1: First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

Note 2: D = Double Link measurement, S = Single Link measurement

Note 1: First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

**Note 2: D = Double Link measurement, S = Single Link measurement**

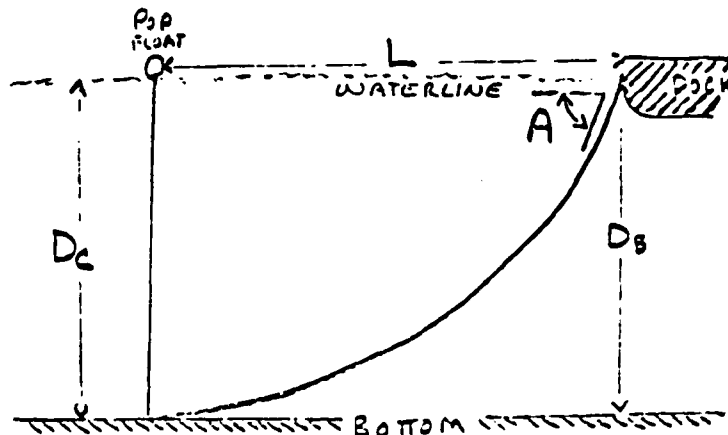
# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET, HOLY LOCH, UK		2. MOORING NO AFDB-7	3. TYPE/CLASS MOORING Special Dry Dock	4. LEG NUMBER: 21	
5. INSPECTION	DATE 18-24 SW 82	DIVERS SUTTON/JELLO	WATER DEPTH	ENGINEER M.M. WALTER	INITIALS

## CATENARY DATA:

$A = 85^\circ$   
 $L = 3 \text{ ft}$   
 $D_B = 79.3 \text{ ft}$   
 $D_C = 79.3 \text{ ft}$

NOTES: Depths @ Mean Low Water Springs  
 "A" recorded in winds 10 KTS  
 or less



## COMMENTS:

## CONFIGURATION, Pad Eye-To-Waterline:

PAD EYE-ANCHOR JOINING LINK + 16 LINKS TO STOPPER + 6 LINKS  
 TO CHOCK + 6 LINKS TO WATERLINE

## OTHER DATA:

Relative Bearing:  $290^\circ$  at deck edge  
 $300^\circ$  deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.

# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET, HOLY LOCH, UK		2. MOORING NO AFDB-7	3. TYPE/CLASS MOORING Special Dry Dock	4. LEG NUMBER: 22
5. INSPECTION	DATE 1824 Jun 82	DIVERS SUTTON/JELLO	WATER DEPTH	ENGINEER M.M. WALTER
			INITIALS	

COMPONENT	Link # or Depth, ft (Note 1)	CONDITION (Note 2)			Voltmeter reading, mV	Comments
		+90%	+80%	-80%		
SECTION I	Nbr					
	RECORDED	✓D				SLIGHTLY RUSTED
SECTION II	#1	5 1/8" D				
"	#2		5 3/8" D			
"	#3			4 1/16" D		
"	#4		5 3/8" D			
"	#5	5 1/8" D				
"	#6	5 3/8" D				
SECTION III	20'	✓D			640	
"	40'	✓D			665	
"	60'	✓D			670	
"	80'	✓D			663	SILTY BOTTOM APPROX. 1' DEEP

Note 1: First link after anchor joining link is #1; all links including detachables are counted (see configuration, next page).

Note 2: D = Double Link measurement, S = Single Link measurement

# MOORING INSPECTION REPORT

1. FACILITY NAVACDET, HOLY LOCH, UK		2. MOORING NO AFDB-7	3. TYPE/CLASS MOORING Special Dry Dock	4. LEG NUMBER: 22	
5. INSPECTION	DATE 18-24 Jun 82	DIVERS SUTTON/JELLO	WATER DEPTH	ENGINEER M.M. WALTER	INITIALS

## CATENARY DATA:

A = 65°

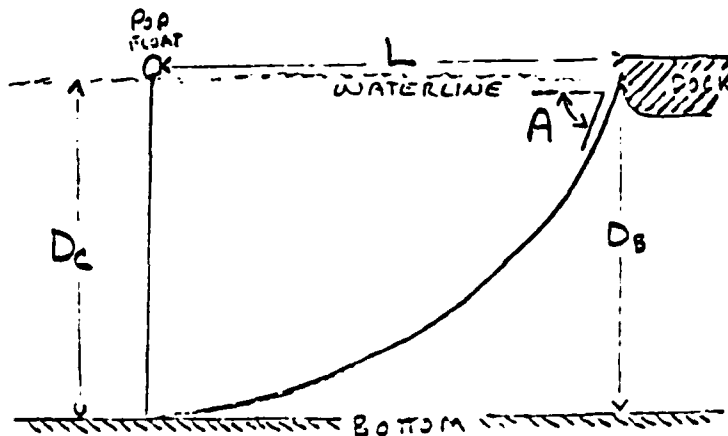
L = 57 ft

D<sub>B</sub> = 79.6 ft

D<sub>C</sub> = 79.6 ft

NOTES: Depths @ Mean Low Water Springs

"A" recorded in winds 10 KTS  
or less



## COMMENTS:

## CONFIGURATION, Pad Eye-To-Waterline:

Not OBSERVED

## OTHER DATA:

Relative Bearing: 000° at deck edge

353° deck edge-to-pop float

Note: Bearing data is considered inconclusive due to short lateral distance of many ground legs, large dock movement relative to lateral distance, and inherent inaccuracies in the hand-held magnetic compass observation system.

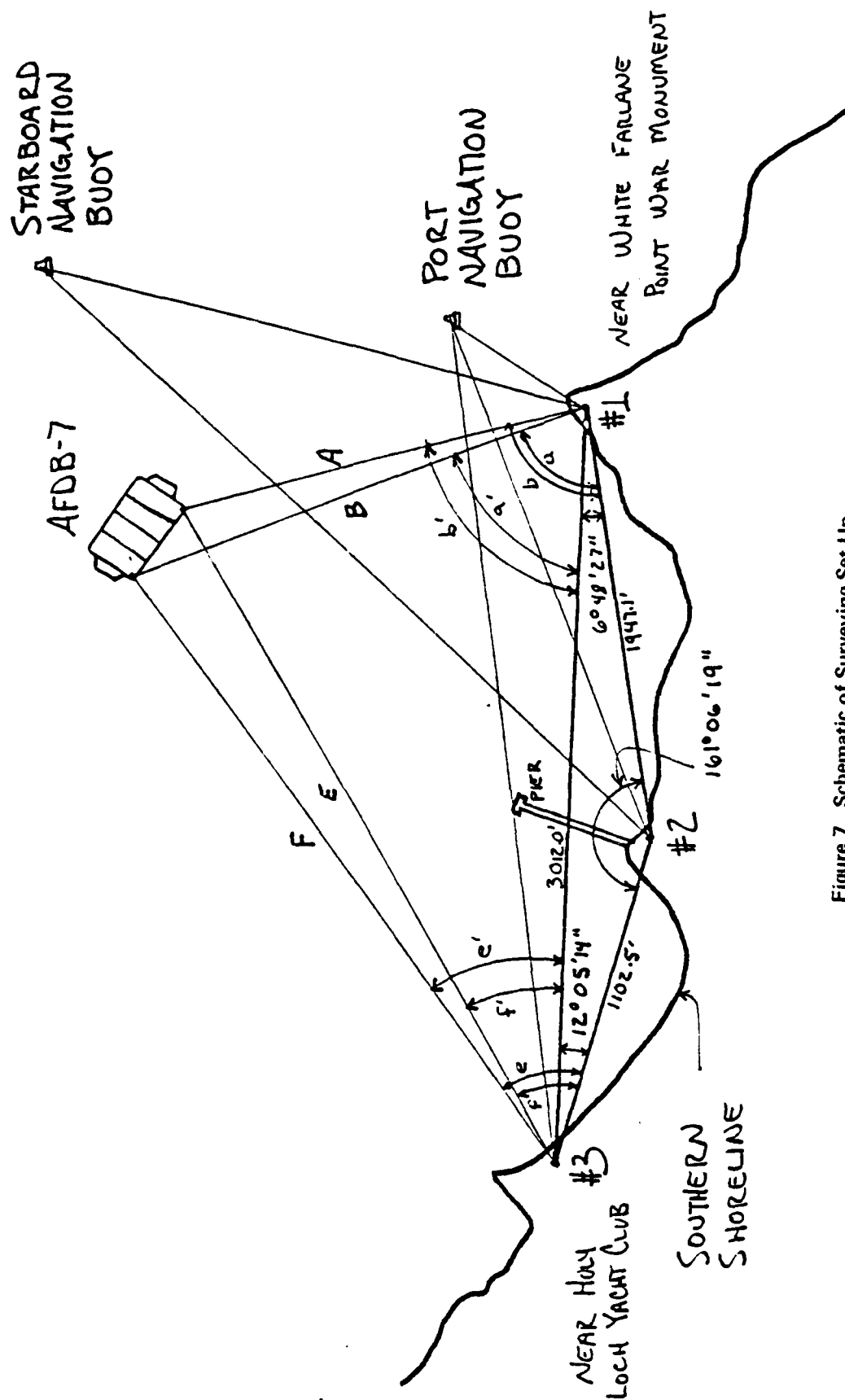


Figure 7. Schematic of Surveying Set-Up

# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET HOLY LOCH, UK		2. MOORING NO AFDB-7	3. TYPE/CLASS MOORING SPECIAL DRY DOCK	4. LAT: LON:	
5. INSPECTION	DATE 19 JUN 82	DIVERS 1	WATER DEPTH 1	ENGINEER M.M. WALTER	INITIALS

LEG#	a	b	e	f	a'	b'	e'	f'	A	B	E	F	TIME
1	78° 50' 20"	85° 44' 20"	51° 39' 40"	44° 51' 40"	72.07139°	78.93139°	39.77389°	32.77389°	1754.40	2063.37	3181.55	3081.60	1035
2	78° 52' 40"	85° 46' 00"	51° 42' 00"	44° 50' 40"	72.07028°	78.9317°	39.61218°	32.75722°	1754.40	2066.67	3182.04	3083.94	1045
3	78° 59' 40"	85° 54' 20"	51° 40' 00"	44° 50' 40"	72.186940	79.09806°	39.57944°	32.75722°	1757.94	2064.41	3186.68	3082.75	1055
4	78° 51' 00"	85° 53' 20"	51° 38' 40"	44° 50' 20"	72.17250°	79.08139°	39.55722°	32.75722°	1755.40	2064.44	3186.00	3085.55	1200
5	78° 56' 20"	85° 53' 40"	51° 39' 40"	44° 53' 20"	72.13139°	79.08644°	39.51389°	32.80167°	1758.47	2065.30	3187.30	3085.47	1220
6	78° 59' 00"	85° 58' 40"	51° 39' 20"	44° 53' 00"	72.17583°	79.17028°	39.56833°	32.79611°	1757.16	2065.61	3189.93	3087.00	1240
7	78° 59' 20"	85° 58' 00"	51° 38' 00"	44° 52' 00"	72.18139°	79.15977°	39.54611°	32.77944°	1758.02	2064.46	3189.19	3086.82	1330
8	78° 59' 20"	85° 59' 20"	51° 39' 00"	44° 51' 40"	72.18139°	79.18139°	39.56278°	32.77389°	1757.97	2065.37	3189.70	3082.18	1400
9	78° 59' 20"	85° 58' 20"	51° 38' 20"	44° 50' 40"	72.18139°	79.16472°	39.55167°	32.75722°	1756.76	2064.73	3188.88	3086.94	1425
10	78° 59' 00"	85° 58' 20"	51° 39' 20"	44° 51' 00"	72.17583°	79.16472°	39.56833°	32.76228°	1758.81	2065.61	3189.68	3082.08	1440
11	79° 00' 00"	86° 00' 00"	51° 38' 20"	44° 52' 00"	72.1925°	79.1925°	39.55167°	32.77944°	1758.44	2064.88	3190.30	3082.17	1450

DATE: 19 JUNE 1982

WINDS: EASTERLY 5-10 KTS

a, b, e, f OBSERVED; ALL OTHER VALUES CALCULATED

Table 3. AFDB-7 Transit Readings

# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET HOLY LOCH, UK		2. MOORING NO AFDB-7	3. TYPE/CLASS MOORING SPECIAL DRY DOCK	4. LAT: LON:
5. INSPECTION	DATE 21 JUN 82	DIVERS -	WATER DEPTH -	ENGINEER M.M. WALTER
INITIALS				

LEG#	a	b	e	f	a'	b'	e'	f'	A	B	E	F	TIME
12	79°10'00"	86°10'00"	51°11'40"	44°52'20"	72.3511°	79.35917°	39.5456°	32.785°	1780.85	2066.65	3185.74	3043.60	1215
13	79°00'00"	86°00'00"	51°36'40"	44°52'00"	72.1925°	79.1925°	39.52389°	32.77944°	1758.44	2063.27	3184.30	3046.77	1200
14	78°55'20"	85°52'20"	51°37°00"	44°50'00"	72.1472°	79.06472°	39.52444°	32.77411°	1754.86	2062.48	3185.33	3048.88	1130
15	78°53'40"	85°50'20"	51°43'00"	44°27'40"	72.08644°	79.03139°	39.62444°	32.77289°	1756.12	2067.88	3184.85	3044.94	1110
16	78°48'40"	85°49'40"	51°38'00"	44°52'00"	72.00361°	79.02028°	39.54611°	32.77144°	1756.31	2064.42	3184.60	3043.10	1055
17	78°52'40"	85°44'20"	51°39'40"	44°49'40"	72.07028°	79.92329°	39.57389°	32.74056°	1752.92	2064.43	3180.81	3083.11	1035
18	78°55'20"	85°42'20"	51°38'20"	44°50'40"	72.11472°	78.89806°	39.5567°	32.75722°	1753.49	2063.77	3182.08	3084.35	1025
19	78°55'40"	85°37'20"	51°39'40"	44°51'20"	72.12028°	78.81472°	39.57389°	32.75833°	1753.15	2065.14	3177.58	3085.04	0950
20	78°48'40"	85°45'40"	51°39'20"	44°53'00"	72.00361°	78.95361°	39.56833°	32.79611°	1756.30	2063.15	3182.77	3082.40	0945
21	78°44'40"	85°41'00"	51°41'20"	44°52'20"	71.93644°	78.87583°	39.6067°	32.785°	1754.88	2064.13	3179.96	3078.53	0930
22	78°45'40"	85°40'00"	51°39'40"	44°52'20"	71.95361°	78.85917°	39.57389°	32.785°	1754.68	2062.76	3179.41	3080.58	0915

DATE: 21 JUNE 1982

WINDS: EAST NORTHEASTERLY 5-10 KTS

a, b, e, f OBSERVED ; ALL OTHER VALUES CALCULATED

Table 3. AFDB-7 Transit Readings (Con't.)



# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET HOLY LOCH, UK		2. MOORING NO AFDB-7	3. TYPE/CLASS MOORING SPECIAL DRY DOCK	4. LAT: LON:
5. INSPECTION	DATE 22 JUN 82	DIVERS -	WATER DEPTH -	ENGINEER M.M. WALTER
INITIALS -				

Time a b c d e f a' b' e' f' A B C F

1710	78°38'20"	85°19'00"	51°52'00"	44°55'40"	71.83139°	78.50917°	39.84086°	32.84056°	175.177	2072.84	3169.11	3078.21
1712	78°25'20"	85°41'40"	50°43'20"	44°57'40"	71.64472°	78.32694°	39.635°	32.87389°	175.429	2061.50	3165.81	3066.77
1714	78°11'00"	85°18'20"	51°48'20"	44°52'00"	71.37583°	78.49826°	39.71833°	32.77944°	175.01	2062.95	3167.42	3059.27
1716	78°10'40"	85°58'40"	50°38'40"	44°55'20"	71.37033°	78.17028°	39.55670°	32.835°	174.943	2053.35	3157.88	3055.65
1718	78°46'40"	85°20'40"	50°46'00"	44°49'20"	71.97028°	78.20360°	39.67944°	32.735°	174.391	2061.08	3167.70	3059.48
1720	78°09'40"	85°15'20"	50°51'20"	44°57'20"	71.35360°	78.44806°	39.76833°	32.86835°	175.464	2065.50	3167.70	3059.48
1722	78°21'40"	85°37'40"	51°18'20"	44°49'40"	71.55361°	78.82028°	39.55167°	32.74056°	175.156	2055.87	3172.16	3062.69
1724	78°21'40"	85°12'40"	51°44'20"	44°56'20"	71.55361°	78.40361°	39.64611°	32.85167°	175.177	2061.28	3165.98	3064.64
1726	78°22'20"	85°56'20"	51°41'40"	44°51'00"	71.56472°	78.13139°	39.60722°	32.76218°	174.711	2059.21	3155.08	3064.26

DATE 22 JUNE 1982

WINDS: EASTERLY 35 KTS

a, b, e, f OBSERVED; ALL OTHER VALUES CALCULATED

Table 3. AFDB-7 Transit Readings (Con't.)

**ANNEX B**

**SIXTH CLASS MOORING INSPECTION REPORTS**

## MOORING INSPECTION REPORT

1. FACILITY NAVACTDET HOLY LOCH, UK		2. MOORING NO. #2	3. TYPE/CLASS MOORING Sixth Class	4. LAT: LON:	
5. Inspection:	DATE 23JUN82	DIVERS Aylsworth/Jello		WATER DEPTH 62'	ENGINEER M.M. Walter
INITIALS					

ITEM	SIZE	LOCATION OF MEASUREMENT	CONDITION (note)			REMARKS
			+90%	+80%	UNK	
Buoy, Cylindrical, 3rd Class	10' long 6' diam.	-----	-	-	-	British 3rd class buoy; excellent condition: no holes, dents, or pitting; medium marine growth(½")
Mooring Ring	UNK.	not measured			XXX	Divers unable to reach buoy topside; condition assumed sat.
Buoy Shackle	Unk.	not measured			XXX	Inside buoy - divers unable to measure
Riser Chain, studlink	2½"	20' depth	XX D			
Swivel	UNK.	not measured	-	-	-	Located at 20' depth; condition assumed satisfactory
Riser Chain, studlink	2½"	60' depth	XX D			
Swivel	UNK.	not measured	-	-	-	Located at 60' depth; condition assumed satisfactory
Riser chain, studlink	¾"	72' depth	XX D			
Anchor swivel and Anchor	UNK	-----	-	-	XXX	Not located - chain buried
<b>SUMMARY:</b> Mooring is in good-to-excellent condition.						

Note 1: S = Single Link Measurement; D = Double Link Measurement

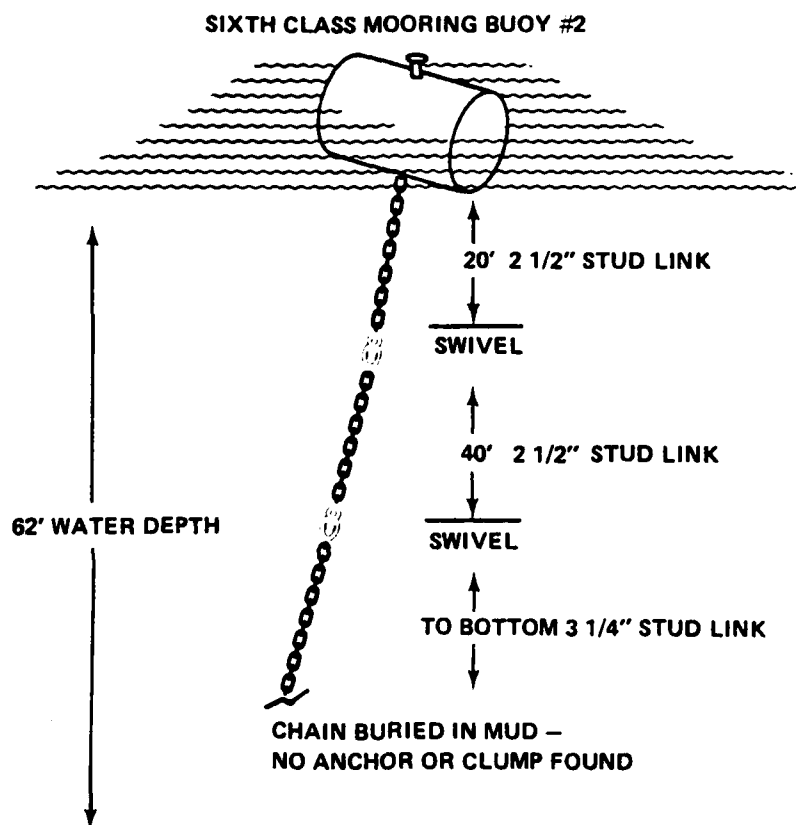


Figure 8. Sixth Class Mooring #2, Schematic

# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET HOLY LOCH, UK		2. MOORING NO. #3	3. TYPE/CLASS MOORING Sixth Class	4. LAT: LON:	
5. Inspection:	DATE 23JUN82	DIVERS Aylsworth/Jello		WATER DEPTH 54'	ENGINEER M.M. Walter
INITIALS					

[illegible]

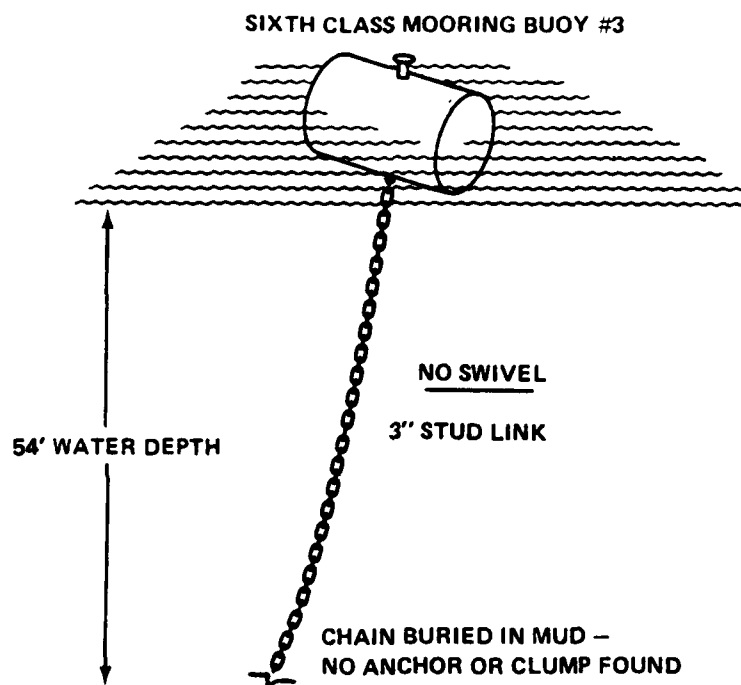


Figure 9. Sixth Class Mooring #3, Schematic

**ANNEX C**

**NAVIGATION BUOY INSPECTION REPORTS**

# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET HOLY LOCH, UK		2. MOORING NO. GREEN, STARBOARD		3. TYPE/CLASS MOORING Navigation Buoy		4. LAT: LON:	
5. Inspection:		DATE 23JUN82		DIVERS Oliver/Wagner		WATER DEPTH 57'	
				ENGINEER M.M. Walter		INITIALS	

[illegible]



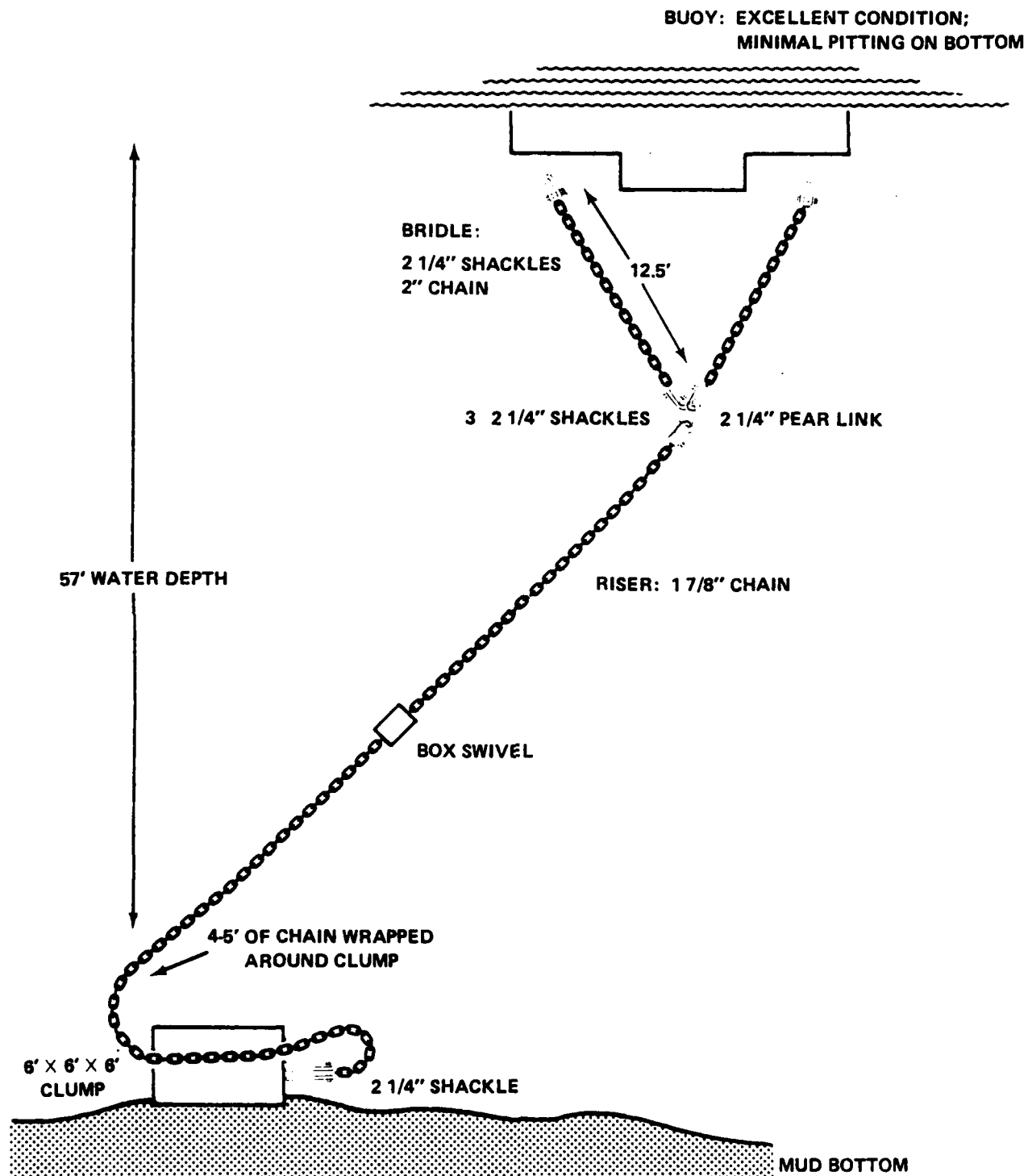


Figure 10. Starboard (Green) Navigation Buoy, Schematic

# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET HOLY LOCH, UK		2. MOORING NO. RED, PORT	3. TYPE/CLASS MOORING Navigation Buoy	4. LAT: LON:	
5. Inspection:	DATE 23JUN82	DIVERS Oliver/Wagner		WATER DEPTH 49'	ENGINEER M.M. Walter
INITIALS					

[illegible]

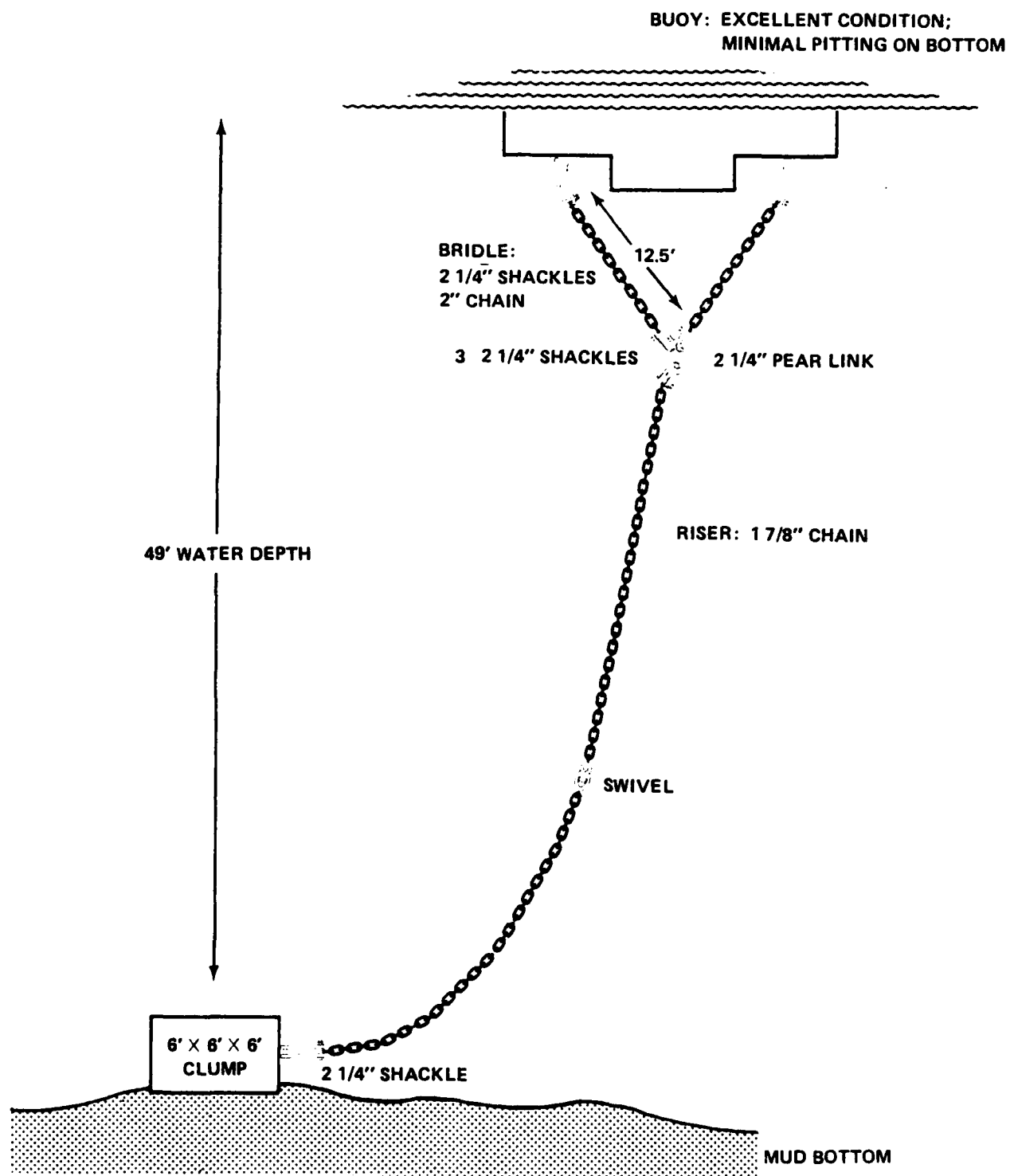


Figure 11. Port (Red) Navigation Buoy, Schematic

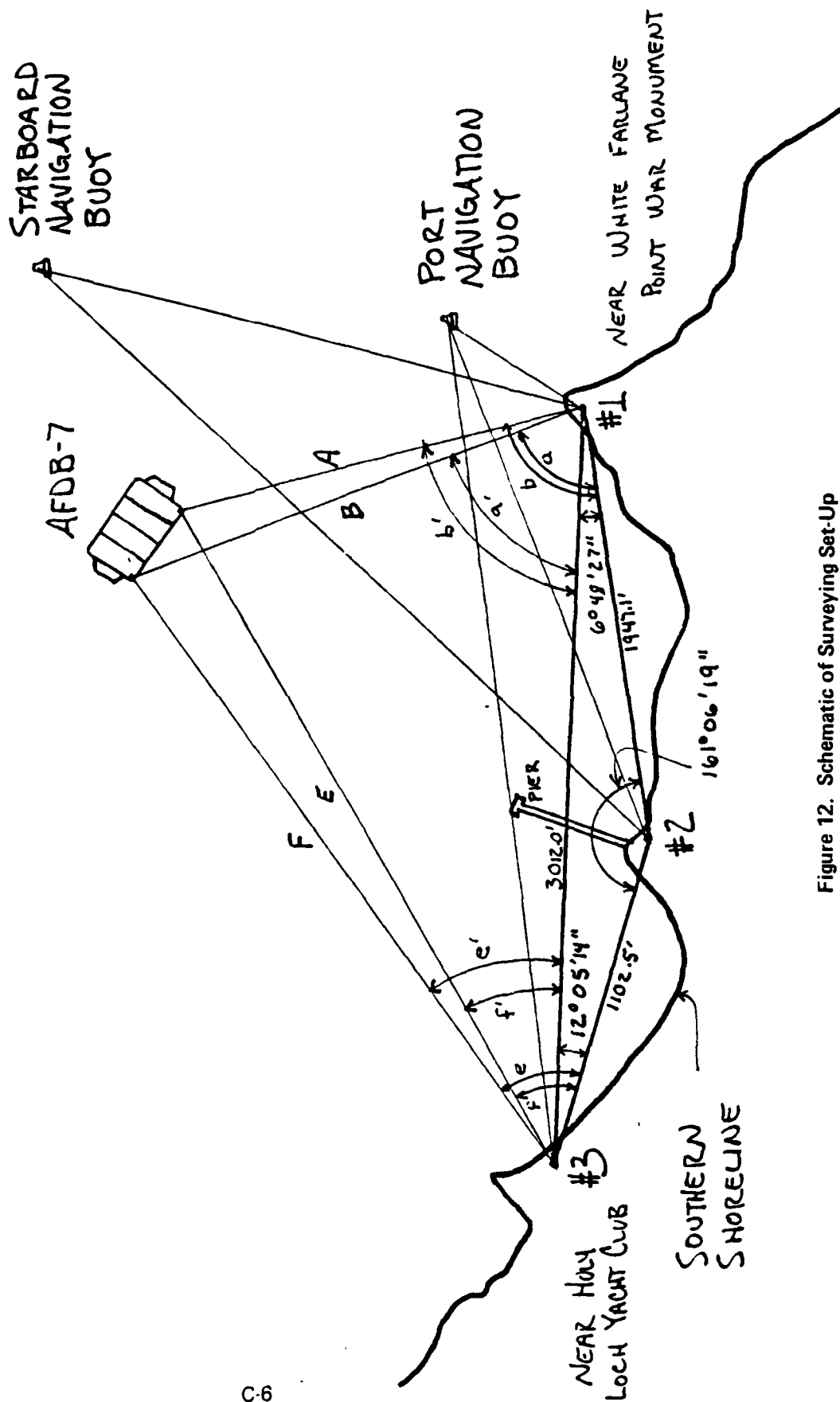


Figure 12. Schematic of Surveying Set-Up

# MOORING INSPECTION REPORT

1. FACILITY NAVACTDET HOLY LOCH, UK		2. MOORING NO RED & GREEN	3. TYPE/CLASS MOORING NAVIGATION BUOYS	4. LAT: LON:	
5. INSPECTION	DATE	DIVERS —	WATER DEPTH —	ENGINEER M.M. WALTER	INITIALS

[illegible]

**ANNEX D**  
**COSTS OF REPLACEMENT PARTS**

### Costs of Replacement Parts

As a result of the analysis of inspection data, it was determined that the upper two shots of chain on each leg of the AFDB-7 mooring required replacement. In addition, it was decided that 2 1/2 inch chain would be utilized pending a mooring redesign:

		Estimated Costs (FY 83 Dollars)		
<u>Item</u>	<u>Size (in.)</u>	<u>Quantity</u>	<u>Unit Cost</u>	<u>Total Cost</u>
Chain (90' shot)	2 1/2	44	\$6,003	\$264,132
Link, Detachable	2 1/2	49*	392	<u>19,208</u>
			Total	\$283,340

\*Includes five spares

**ANNEX E**  
**CHRONOLOGY OF EVENTS**



### **Chronology of Significant Events**

<b>20 NOV 81</b>	<b>CINCUSNAVEUR requests assignment of UCT-1 for underwater inspection of Holy Loch moorings</b>
<b>26 MAR 82</b>	<b>COMCBLANT states CHESNAVFACENGCOM to provide funding and technical support for inspection</b>
<b>13 MAY 82</b>	<b>CINCUSNAVEUR expands inspection to include all 22 legs of AFDB-7 mooring</b>
<b>17 JUN 82</b>	<b>Divers and Engineer arrive on site</b>
<b>18 JUN 82</b>	<b>Set up transits; caliper measurements Section II all legs; contact with station personnel</b>
<b>19 JUN 82</b>	<b>Transit measurements; catenary data and bearing legs 12 - 22</b>
<b>21 JUN 82</b>	<b>Transit measurements; catenary data and bearing legs 1 - 11</b>
<b>22 JUN 82</b>	<b>Transit measurements; Go/No-Go and voltmeter readings on Section III all legs</b>
<b>23 JUN 82</b>	<b>Inspection of Navigation Buoys and Sixth Class moorings</b>
<b>24 JUN 82</b>	<b>Partial lift of legs #15 and #19; Go/No-Go on Section I of all legs</b>
<b>25 JUN 82</b>	<b>Debrief CO and XO of AFDB-7, and CO and PWO NAVACTDET Holy Loch</b>
<b>28 JUN 82</b>	<b>Debrief Commodore SUBRON 14 and M.O.D Representatives</b>
<b>8 JUL 82</b>	<b>Debrief NAVFACENGCOM Code PC-2</b>
<b>19 JUL 82</b>	<b>Debrief LANTNAVFACENGCOM Code 10</b>

## **ANNEX F**

### **REFERENCES**

Ref. A — CINCUSNAVEUR LONDON UK 201642Z NOV 81

Ref. B — CINCUSNAVEUR LONDON UK 130752Z MAY 82

Ref. C — COMCBLANT NORFOLK VA 261833Z MAR 82

Ref. D — CHESNAVFACENGCOM WASHINGTON DC 151407Z JUN 82

Ref. E — CHESNAVFACENGCOM WASHINGTON DC 021944Z JUN 82

Ref. F — CHESNAVFACENGCOM WASHINGTON DC 291403Z JUL 82

00000000000000000000000000000000  
U N C L A S S I F I E D  
00000000000000000000000000000000

ROUTINE

R 201642Z NOV 81

FM CINCUSNAVEUR LONDON UK,

TO CINCLANTFLT NORFOLK VA

INFO COMNAVFACEGCOM ALEXANDRIA VA  
COMFAIRMD NAPLES IT  
COMCLANT NORFOLK VA  
COMSUBRON FOURTEEN  
NAVSUPPO LA MADDALENA IT  
UCT ONE

LANTNAVFACEGCOM NORFOLK VA  
CHESNAVFACEGCOM WASHINGTON DC  
COMNAVACT LONDON UK  
LANTNAVFACEGCOM BRD NAPLES IT  
NAVACTDET HOLY LOCH UK

BT

UNCLAS //404070//

SU J: UNDERWATER CONSTRUCTION TEAM (UTC) FY82 WORKLOAD PLANNING  
FOR INSPECTION OF FLEET MOORINGS IN EUROPEAN AREA

A. CINCUSNAVEUR LONDON UK 231723Z FEB 81

1. REF DISCUSSED CINCUSNAVEUR FLEET MOORING INSPECTION  
REQUIREMENTS IN LA MADDALENA IT, HOLY LOCH UK, CARTAGENA SP, AND  
ROTA SP, AND REQUESTED UCT ONE INVOLVEMENT TO REDUCE COSTS AND  
MAXIMIZE INSPECTION EFFORTS. RESPONSE TO LA MADDALENA  
REQUIREMENTS WAS COMPLETED DURING FY81 UCT ONE DEPLOYMENT,  
AND IS APPRECIATED. CARTAGENA REQUIREMENTS ARE PROGRAMMED FOR  
FUNDING BY LANTNAVFACEGCOM FOR ACCOMPLISHMENT BY SPANISH NAVY  
IN FY82, AND LANTNAVFACEGCOM WILL SEEK FURTHER FUNDING FOR  
ACCOMPLISHMENT OF ROTA REQUIREMENTS BY CONTRACT.  
ACCORDINGLY, NAVACTDET HOLY LOCH FY81 INSPECTIONS IDENTIFIED  
IN REF ARE REMAIN THE ONLY UCT WORKLOAD REQUIREMENTS IN  
NAVEUR AREA FOR FY82.

2. LANTNAVFACEGCOM HAS ADVISED RESOURCES WILL BE MADE AVAILABLE  
FOR HOLY LOCH INSPECTIONS, AND LANTNAVFACEGCOM WILL COORDINATE  
WITH CHESNAVFACEGCOM AND UCT ONE REGARDING DETAILED LOGISTICS.  
DUE TO LIMITED WEATHER WINDOW PREFER INSPECTION BE  
SCHEDULED FOR APPROX THREE WEEK PERIOD MAY - JUL 82. DECISION ON  
UCT ONE ASSIGNMENT IS DESIRED SOONEST IN ORDER THAT MINISTRY  
OF DEFENSE UK CAN BE INFORMED OF INSPECTION WORK APPROVED FOR  
ACCOMPLISHMENT BY U.S. NAVY FORCES, AND THUS LIMIT MOD PLANNED

DLVR:CHESNAVFACEGCOM WASHINGTON DC(8)...INFO

RTD:000-000/COPIES 0008

409548/324  
CSN:RX0Y00303

1 OF 2 81 0293 324/16:42Z 201642Z NOV 81  
CINCUSNAVEUR LONDON UK

00000000000000000000000000000000  
U N C L A S S I F I E D U  
00000000000000000000000000000000

U U N C L A S S I F I E D U

3. REQUEST APPROVAL FOR UCI ONE ASSIGNMENT FOR HOLY LOCH MOORING INSPECTION.

AT

2 OF 2 41 0293 324/16:42Z 201642Z NOV 61  
CIRCUSNAVEUR LONDON UK

U U N C L A S S I F I E D

U N C L A S S I F I E D U

## OUTLINE

R 130752Z MAY 82

FM CINCUSIAVEUR LONDON UR

TO COMCBANT NORFOLK VA

INFO LANTNAVFACENGCOM NORFOLK VA  
NAVDET HOLY LOCH UK

CHESNAV FACENGCOM WASHINGTON DC  
UCT ONE

BT  
UNCLAS //R11000//

SUBJ: FLEET MOORING MAINTENANCE AND UNDERWATER CONSTRUCTION  
TEAM (UCT) WORKLOAD PLANNING

A. FONECOM MR. P. TARP, LANTNAVFACENGCOM/CDR H.B. LEMON,  
CINCUSNAVEUR, CODE M452, 10 MAY 82  
B. CINCUSNAVEUR LONDON UK 261722Z FEB 82 (NOTAL)  
C. COMCBLANT. NORFOLK VA 261822Z MAR 82 (NOTAL)

1. IN REF A, LANTNAVFACENCOM PROVIDED TECHNICAL RECOMMENDATION TO MODIFY SCOPE OF UCT WORKLOAD AT HOLY LOCH, WHICH WAS SUBMITTED IN REF B AND SCHEDULED FOR MAY/JUNE 82 IN REF C, TO INSPECT ALL 22 / MOORING LEGS FOR AFOR 7 (FLOATING DRY DOCK). THIS SCOPE INCREASE WAS REQUESTED IN ORDER TO CHECK AND ASSURE THAT CONDITION AND LENGTH OF CATENARY OF THE MOORING LEGS ARE SATISFACTORY. IT WAS ESTIMATED THAT THIS ADDITIONAL WORK SCOPE WILL REQUIRE UCT ONE SCHEDULING FOR THREE TO FOUR WEEKS, VICE TWO WEEKS ORIGINALLY PLANNED.

2. REQUEST THAT THIS REVISED WORKLOAD BE INCLUDED IN THE TASKING OF UCT ONE, AND THAT THE DURATION OF UCT ONE VISIT TO HOLY LOCH BE EXTENDED, ACCORDINGLY, AS REQUIRED.

BT

OLGA:CHESNAVFACE@NGCOM WASHINGTON DC(8)...INFO

RTD:000-000/CGPIES:0008

454794/133  
:E80Y00205

1 OF 1 M1 0193 133/07:51Z 130752Z MAY 62  
CINCUSNAVEUR LONDON UK

U U N C L A S S I F I E D U



## 2. INTRODUCTION

R 161230Z JUN 82

FR. INVACTIONET ONLY LOCK UP.

INFO COMBINATION FOURTEEN  
CRESNAVAFACE.GCOM: 45410000 DC

USS LOS ALAMOS

IR 151407Z JUN 82

FM CHES INFACE'GCON WASHINGTUN DC

TO COMNAVFACENGCON ALEXANDRIA VA.

UCT ONE

ILFO LANTHAFACENGCOM NORFOLK VA  
COMORLANT NORFOLK VA

CIRCUSLAVER LONDON UK  
NAVACTDET HOLY-LOCN UK

BT  
U.C.L.A.S // 112006//

SUBJ: HOLY LOCH FLEET MOORING INSPECTION

- A. CIRCUS PAVEUR LONDON UK 201722Z FEB 82  
B. COMBLANT NORFOLK VA 241833Z MAR 82  
C. CIRCUS PAVEUR LONDON UK 130752Z MAY 82 NOTAL  
D. COMBLANT NORFOLK VA 141723Z MAY 82 NOTAL  
E. LANTHAFACENGCOM NORFOLK VA 191740Z MAY 82

1. REF A IDENTIFIED REQUIREMENTS TO INSPECT CERTAIN FLEET MOORINGS AT HOLY LOCH, SCOTLAND. REF B REQUESTED CHESNAVFACEGCOM TO PROVIDE FUNDING AND TECHNICAL ASSISTANCE TO UCT ONE FOR THE INSPECTION. CHESNAVFACEGCOM FUNDING TO BE PROVIDED UNDER NAVFAC SPONSORED FLEET MOORING MAINTENANCE (FMM) PROGRAM. REFS C AND D EXTENDED THE INSPECTION TO INCLUDE ALL 22 MOORING LEGS OF AFDR 7. REF E FURTHER REQUESTED CHESNAVFACEGCOM TO TAKE FOR ACTION THE FUNDING OF THE EXPANDED INSPECTION EFFORT.

2. AS REQUESTED AND IAW REQUIREMENTS PROVIDED BY UCT ONE AND CRITERIA FOR USE OF FMM FUNDING PROVIDED BY COMNAVFACEGCOM CODE 10. THE FOLLOWING PLAN OF ACTION HAS BEEN DEVELOPED FOR INSPECTING THE MOORINGS ON AF06 7:

A. FUNDING HAS BEEN PROVIDED TO UCT ONE FROM THE NAVFAC

PLVH:CHES,AVFACE:BCDM WASH:AGTO, DC(A)...INFO

RTD:000-000/CUPIES:0019

620924/107  
SN:FA0100525

1 OF 2 01 0521 167/22:30Z 151407Z JUN 12  
CHESDAYFACEANGCUM WASHINGTON DC

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U. S. C L A S S I F I E D U.  
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F-7





FROM CHESNAVFACENGCOM WASHINGTON DC  
 TO CINCUSNAVEUR LONDON UK  
 INFO LANTNAVFACENGCOM NORFOLK VA  
 COMNAVFACENGCOM ALEXANDRIA VA  
 NAVACTDET HOLY LOCH UK  
 UCT ONE  
 CIVENGR LAB PORT HUENEME CA  
 USS HUNLEY

UNCLAS //N11000//

SUBJ: HOLY LOCH FLEET MOORING INSPECTION

- A. COMBLANT NORFOLK VA 251833Z MAR 82
- B. CHESNAVFACENGCOM WASHINGTON DC 151407Z JUN 82
- C. MTG BTWN LANTNAVFACENGCOM AND CHESNAVFACENGCOM 15 JUL 82
1. IAW REF {A}, CHESNAVFACENGCOM PROVIDED FUNDING AND TECHNICAL ASSISTANCE TO UCT ONE FOR THE UNDERWATER INSPECTION OF SELECTED MOORINGS AT HOLY LOCH, SCOTLAND. REF {B} PROVIDED A PLAN OF ACTION FOR INSPECTING THESE MOORINGS. THIS IS A PRELIMINARY REPORT OF THE INSPECTION FINDINGS.
2. THE INSPECTION WAS CONDUCTED DURING 17-25 JUN 82. SIGNIFICANT

DISTR	
DISTRIB NAME, TITLE, OFFICE SYMBOL, PHONE M. WALTER 433-3881	
FPO-1FP{PDC} 29 JUL 82	COPY TO: FPO-1FP{PDC}... FPO-1FP2 ...FPO-1FP...09...00... 0161...DAILY
NAME, TITLE, OFFICE SYMBOL, PHONE [Signature]	
SECURITY CLASSIFICATION UNCLASSIFIED	GROUP 2914032

DD FORM 173/2 (OCR)

PREVIOUS EDITIONS OBSOLETE AS OF 1 JAN 1981  
 S. N. 01000-W-000-1731

AD-A166 643

HOLY LOCH FLEET MOORINGS INSPECTION REPORT(U) NAVAL  
FACILITIES ENGINEERING COMMAND WASHINGTON DC CHESAPEAKE  
DIV 15 OCT 82 CHES/NAVFAC-FPO-1-82(22)

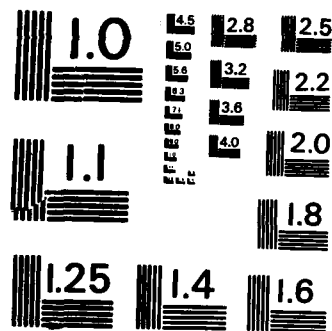
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F/G 13/10

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MICROCOPY RESOLUTION TEST CHART  
NATIONAL BUREAU OF STANDARDS-1963-A

## FINDINGS CONCERNING EACH MOORING ARE AS FOLLOWS:

A. STBDONAV BUOY AND PORT NAV BUOY: BUOYS, RISER CHAIN AND ANCHOR CLUMPS APPEAR TO BE IN GOOD CONDITION.

B. TWO 6TH CLASS MOORINGS: BUOYS AND RISER CHAIN APPEAR TO BE IN GOOD CONDITION; ANCHORS BURIED IN MUD.

C. AFDB-7: ALL 22 LEGS INSPECTED.

{1} ON LEG NO. 22, LESS THAN 80 PER CENT ORIGINAL WIRE DIAMETER REMAINING.

{2} NO BROKEN CHAIN LINKS OBSERVED.

{3} ALL ANCHORS APPEAR TO BE BURIED IN MUD.

{4} LEGS NOS. 3, 5, AND 19 OBSERVED WITH SLACK CHAIN ON BOTTOM.

{5} SIXTY FOUR PER CENT OF LEGS HAVE READINGS OF 80-90 PER CENT ORIGINAL WIRE DIAMETER REMAINING.

{6} THIRTY SIX PER CENT OF LEGS APPEAR TO HAVE LITTLE OR NO CATENARY.

3. AS DISCUSSED DURING REF {C}, CEL IS PROVIDING INPUT TO LANTNAV-FACENGCOM CONCERNING CATENARY ADJUSTMENTS. THIS REPORT SHOULD BE COMPLETED IN APPROXIMATELY SIX WEEKS. ALSO DISCUSSED DURING REF {C}, CHESDIV RECOMMENDS THE FOLLOWING ACTIONS:

DISTR

DRAFTER (TYPE NAME, TITLE, OFFICE SYMBOL, AND PHONE)		SPECIAL INSTRUCTIONS	
RELEASER (TYPE NAME, TITLE, OFFICE SYMBOL, AND PHONE)		1	
DATE OF PREPARED		SECURITY CLASSIFICATION	DATE-TIME GROUP
		UNCLASSIFIED	

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THIS PUBLICATION IS OBSOLETE AS OF 1 JAN 1981  
S/N 0102-LP-000-1721

A. AS-WEAR TERM ACTION BEFORE THE WINTER SEASON:

{1} TOREPLACEMENT OF WORN PORTION OF LEG NO. 22.

{2} ADJUSTMENT OF MOORING LEGS TO TIGHTEN CATENARIES WITH INPUT FROM CEL.

B. AS LONG TERM ACTION, OVERHAUL COMPLETE MOORING INCLUDING:

{1} REPLACEMENT OF ALL CHAIN WITH MEASUREMENTS OF LESS THAN 90 PER CENT ORIGINAL WIRE DIAMETER REMAINING.

{2} INSTALLATION OF EACH LEG TO RESTORE ITS PROPER CATENARY.

4. AN INSPECTION REPORT WILL BE FORWARDED TO INTERESTED COMMANDS IN APPROXIMATELY SIX WEEKS.

01-02-00-000

DISTR

CHARACTER TYPE, NAME, TITLE, OFFICE SYMBOL, PHONE

SPECIAL INTRODUCTIONS

THIRD NAME, TITLE, OFFICE SYMBOL, AND PHONE

SIGNATURE

SECURITY CLASSIFICATION

DATE TIME GROUP

UNCLASSIFIED

**ANNEX G**  
**PHOTOGRAPHS**



**View of AFDB-7 and U.S.S. HUNLEY, looking north from White Farlane Point.**



**On-deck arrangement of anchor leg, showing pad-eye, anchor joining link (red), and stud-link chain.**





Using inclinometer to measure angle of anchor leg.



Double-link wire diameter measurement, using pre-cut "Go/No-Go" gauge.



Chain in Section II of Leg 21; although this chain is rusty and flaking, the double-link measurement was over 90% throughout.



Chain in very good condition, showing light rusting and some marine growth near the waterline.



Divers from UCT-1 after conducting underwater inspection.

END

Dtic

5-86